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JULY · 1935

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Pacific Coast Branch
718 Towne Avenue, Los Angeles, Calif.

AMERICAN GAS ASSOCIATION MONTHLY

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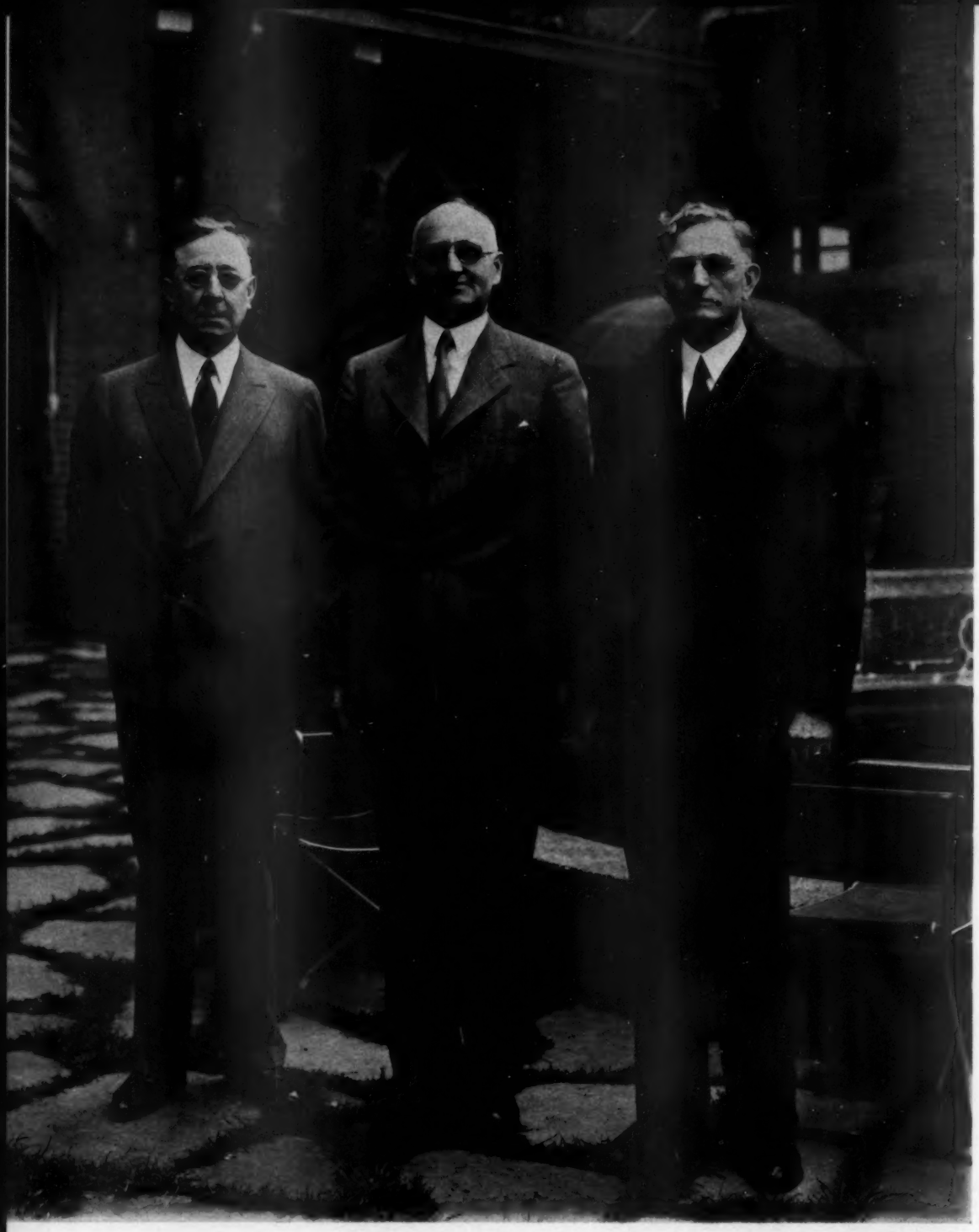
Published monthly by the American Gas Association. Publication Office, American Building, Brattleboro, Vt. Editorial Offices, 420 Lexington Avenue, New York, N. Y. Address all communications to 420 Lexington Avenue, New York, N. Y. The Association does not hold itself responsible for statements and opinions contained in papers and discussions appearing herein. Entered as Second Class Matter at the Post Office at Brattleboro, Vermont, February 10th, 1922, under the Act of March 3, 1879.

SUBSCRIPTION RATE : $3.00 A YEAR



Left to right—L. B. Denning, of Dallas, who has been nominated for president of the Association for the term 1935-1936; P. S. Young, president, and H. O. Caster, past president.

AMERICAN GAS
ASSOCIATION
MONTHLY

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James M. Beall, Editor

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Association Officers Nominated for Coming Year

ANNOUNCEMENT is hereby made in accordance with the by-laws of the Association of the following nominations which will be reported by the General Nominating Committee at the annual meeting in Chicago, in October, 1935:

For President—L. B. Denning, President, Lone Star Gas Co., Dallas, Texas.

For Vice-President—Herman Russell, President, Rochester Gas & Electric Corp., Rochester, N. Y.

For Treasurer—J. F. Rooney, Assistant to Vice-President, Consolidated Gas Company of New York, New York, N. Y.

For Directors—Two-Year Terms:

Walter C. Beckjord, Vice-President and General Manager, Columbia Gas & Electric Corp., Pittsburgh, Pa.

H. O. Caster, Member Executive Committee, Henry L. Doherty & Co., New York, N. Y.

Charles M. Cohn, Vice-President, Consolidated Gas Electric Light & Power Co., Baltimore, Md.

H. C. Cooper, President and General Manager, Hope Natural Gas Co., Pittsburgh, Pa.

J. S. DeHart, Jr., President, Isbell-Porter Co., Newark, N. J.

George S. Hawley, President, Bridgeport Gas Light Co., Bridgeport, Conn.

C. W. Hunter, Vice-President, United Engineers and Constructors, Inc., Philadelphia, Pa.

Conrad N. Lauer, President, The Philadelphia Gas Works Co., Philadelphia, Pa.

B. J. Mullaney, Vice-President, The Peoples Gas Light & Coke Co., Chicago, Ill.

Respectfully submitted,

DANA D. BARNUM, *Chairman*
FRANK L. CHASE
C. E. GALLAGHER
H. L. MASSER
P. R. TAPPAN
F. C. WEBER
Nominating Committee

The following nominations have been made by the other Nominating Committees for the next Association year.

Natural Gas Department: For Chairman—William Moeller, Jr., Vice-President, Southern California Gas Company, Los Angeles, Calif.; for Vice-Chairman—George E. Welker, President, United Natural Gas Co., Oil City, Pa.

Accounting Section: For Chairman—F. L. Griffith, Vice-President, The Peoples Gas Light & Coke Company, Chicago, Ill.; for Vice-Chairman—E. J. Tucker, Assistant General Manager & Secretary, Consumers Gas Co. of Toronto, Toronto, Ont., Canada.

Commercial Section: For Chairman—C. E. Bennett, President, Binghamton Gas Works, Binghamton, N. Y.; for Vice-Chairman—F. M. Banks, Vice-President, Southern California Gas Co., Los Angeles, Calif.

Industrial Gas Section: For Chairman—C. W. Gale, New Business Manager, Knoxville Gas Co., Knoxville, Tenn.; for Vice-Chairman—Ralph L. Manier, Industrial Heating Engineer, The Syracuse Lighting Co., Syracuse, N. Y.

Manufacturers' Section: For Chairman—John A. Fry, President, Detroit-Michigan Stove Co., Detroit, Mich.; for Vice-Chairman, Apparatus Division—Merrill N. Davis, Vice-President in Charge of Sales, S. R. Dresser Manufacturing Co., Bradford, Pa.; for Vice-Chairman, Appliance Division—J. Scott Fowler, President, Lovekin Water Heater Co., Philadelphia, Pa.

Publicity and Advertising Committee: For Chairman—Henry Obermeyer, Assistant to Vice-President, Consolidated Gas Company of New York.

Technical Section: For Chairman—F. A. Lydecker, General Superintendent of Gas Distribution, Public Service Electric & Gas Co., Newark, N. J.; for Vice-Chairman—Martin I. Mix, Superintendent of Distribution, The Peoples Gas Light & Coke Co., Chicago, Ill.

1935 Legislative Products of Forty-four States

By KURWIN R. BOYES
Secretary, American Gas Association

EVERY other year is a big year for state legislation, since the majority of legislatures meet in regular session. This is the big year. Under prevailing conditions what the state solons tried to do and what they accomplished is of interest and significance, particularly to public utilities. It is the purpose of this article to present, from the standpoint of public utilities, the general trend of legislation introduced and, in so far as possible, the more significant legislation enacted by the forty-four state legislatures which convened since the first of the year.

The material for this article was supplied for the most part by correspondents, members of the American Gas Association, in each of the states having a legislature in session. The cooperation of these volunteer reporters is another example of the splendid spirit of helpfulness prevailing in the public utility industry.

An effort has been extended to make this picture complete as to the more important phases of state public utility legislation. However, the difficulty in securing complete returns and their analyses can be appreciated. Also, not all the legislatures had adjourned and a few were meeting in special session as this article was prepared.

Legislative Flood

An avalanche of bills were introduced, breaking all records in many states. For instance, in California a total of 3,951 measures were presented during the longest and probably the most controversial legislative session in its history. In the State of Washington the session was described as "hectic during which it was exposed to all the radical proposals that a free and greedy people can imagine." There were 1,121 bills introduced. Staid old Massachusetts broke all previous records with 2,328 bills introduced up to January 24, 800 more than last year's previous peak. Of these 2,328 bills, no fewer than 100 pertain to the regulation of public utilities.

Commenting on the situation in Massachusetts an editorial stated: "If all the bills concerning public utilities, supposedly the fruit of much thought, knowledge and wisdom, that have been filed on Beacon Hill were by some magic to be enacted, what chaos would prevail in the part of that troubled field lying within this State! It is high time, and this may well be the occasion, for the average citizen to learn something of the avalanche of such bills, and of their character and possible consequences."

Common Sense Checks Tide

Of course, much legislation is introduced for its effect on constituents back home, with no thought or hope of its passage. Even with this knowledge in mind any utility man observing the landslide of proposed legislation affecting public utilities could not help but feel alarmed. As might be expected these measures tightened regulation, increased taxation, and greased the ways for public ownership. It was transparently clear from the number and nature of the bills that legislative severity toward utilities was highly popular among lawmakers of most states, whatever may have been the excellence of past regulation or the steady downward course of charges for gas and electricity. It is splendid campaign material, not easily refuted or even understood, for the "friends of the people." Then there was the example and inspiration from Washington on a wider scale.

While there was plenty of justification for alarm in the early stages of the legislative season, common sense appears to have prevailed. Good old-fashioned Americanism apparently asserted itself, and the results are not nearly as bad as might have been expected.

From a general standpoint, perhaps the most important kinds of legislation considered by the states this year were those dealing with taxation and social security measures. From the viewpoint of the public utilities, perhaps the most important legislation embraced taxation and regulatory matters. Efforts to increase utility taxation and regulation were persistent in most states.

A keen observer of state public utility legislation, Public Utilities Fortnightly, stated that the state legislatures seemed for the most part more conservative than the administrative branches. . A great many of the so-called radical legislative proposals were placed before these state legislatures by their own Governors, who in turn had been directly or indirectly inspired by the anti-utility policies actively encouraged by the Federal Administration in Washington. In some cases, of course, the state legislatures equalled and in others exceeded their Governors in anti-utility sentiment. The significant point is that the state legislatures acted in a number of cases as brakes upon the state executives. This is the reverse of the general historical experience, for it has usually been the executive branch of state governments which has shown more restraint in the matter of radical proposals. It indicates that the Governors were probably more responsive to Washington, while the state legislatures are more responsive to the local vote.

Texas Prohibits Gas Wastage

In a notable session the Texas Legislature passed a bill in a heroic attempt to stop the tremendous wastage of gas escaping from gasoline production plants and stripping plants in the so-called Panhandle district. It is hoped that the measure will be workable and successful in its purpose. The same legislature refused to create a Texas Conservation Corporation, the main purpose of which was to build a pipe line to Detroit, thus preventing an unquestionably uneconomic project advocated by the new dealers.

Regulatory Legislation

Florida is one of six states having no commission regulation of gas and electric companies. Several attempts to provide such regulation met with failure in the legislature of that state. The Texas Commission has limited authority over gas companies and a bill creating a Commission with full utility regulatory powers failed to pass the Texas Legislature.

Perhaps the outstanding piece of regulatory legislation enacted was the bill in Connecticut which considerably enlarged the powers of its Public Service Commission. Obviously anticipating the enactment of the Rayburn-Wheeler bill by the Federal Congress, the new Connecticut law contains the following declaration:

"Section 1. The general purposes of this act are to assure to the state of Connecticut its full power to regulate its public service corporations, to increase the powers of the public utilities commission and to promote local control of the public service corporations of this state, and it shall be so construed as to effectuate these purposes."

The Act provides, amongst other matters, that "any managerial service contract made by a public service company shall be voidable on order of the commission, but may be enforced as between the parties unless disapproved." Also that a public service company shall not lease or dispose of any essential part of its plant without Commission approval.

The principal section follows: "Sec. 6. As used in this section, 'holding company' shall mean any corporation, association or person which, either alone or in conjunction and pursuant to an arrangement or understanding with one or more other corporations, associations or persons, directly or indirectly, controls a gas, electric or water company. No gas, electric or water company, or holding company, or any official, board or commission purporting to act under any governmental authority other than that of this state or of its divisions, municipal corporations or courts, shall interfere with or attempt to interfere with or exercise authority or control over any gas, electric or water company incorporated by this state and engaged in the business of supplying service within this state, or with or over any holding company incorporated by this state and doing the principal part of its business within this state, without having first obtained the approval of the commission, except as the United States may properly regulate actual transactions in interstate commerce. Any action contrary to the provisions of this section shall be voidable on order of the commission."

RUNNING WILD.
Reprinted from the Philadelphia Inquirer

The Act further grants to the Commission the power to order improvements, repairs or alterations to plant or equipment and to investigate rates to determine whether they are "unreasonably discriminatory or more or less than just, reasonable and adequate or that the service is inadequate or in excess of public necessity and convenience." Appeals to the state courts from Commission orders are provided for with a direction for reference back, where the court finds errors, to the Commission to take further evidence and report back to the court.

A bill to abolish the present Public Utilities Commission in Michigan and to establish a new Public Service Commission consisting of the Governor, High Commissioner, and State Treasurer died in committee as did one reducing the salaries of the Commission. In the same state an attempt to decentralize the Public Utilities Commission and to appoint master commissioners was indefinitely postponed.

An attempt failed in Colorado to regulate contracts between public utilities and their affiliated interests, issuance of stock, bonds, etc., by public utilities, requiring public utilities to pay costs of investigations, and providing minimum wages for gas company employees.

Arkansas Fact Finding Tribunal

Before adjournment the Arkansas Legislature passed the Public Utilities Bill. Two years ago the legislature created what was known as the Fact Finding Tribunal. Its duties were to find all facts pertaining to the making of rates. Such facts were certified to the various city councils, who, at that time, had jurisdiction to make rates, if in the opinion of the councils the facts found by the Tribunal justified a change in rates. The present law is the regular Public Utilities Commission form conferring rather extensive jurisdiction as to both rates and service. The new law provides that all franchises shall hereafter be indeterminate and that no new lines of facilities can be built without first obtaining a certificate of necessity and convenience—this particular provision also applies to municipal operation. The Commission has no jurisdiction over the rates of municipally owned plants.

In Georgia an attempt to place municipally owned utilities under Commission jurisdiction did not succeed.

By a new law New York requires Public Service Commission approval for reclassification of stock of a public utility company.

The North Dakota Legislature adopted a resolution directing the Railroad Commission to investigate gas and electric rates and the feasibility of public ownership and report back to the next legislature, while a proposal to investigate penalties and service charges was defeated in Kansas.

Among the measures in Texas which failed to become laws was one abolishing the service charge from gas rates, and another making common carriers out of gas pipe lines.

Utah increased the Commission to three full time members and raised their salaries as well. It refused to declare pipe lines and submetering corporations to be public utilities, to require Commission approval for utilities contracting for management service, require utilities to set up adequate depreciation reserves, give Commission power to fix reserves, prevent merger, lease or purchase of utilities without Commission permission, give Commission power to secure issues; or to prohibit gas companies discriminating in rates between classes of users, etc.

Vermont no longer allows foreign corporations to function without Commission approval. In the same state corporations are now required to file annually name and residence of each shareholder, number of shares held by each and par value of stock. Also in Vermont a bill failed which would have allowed five persons to petition the Commission on change of rates, such rates not to become effective until final determination.

The powers of the Public Service Commission were increased in West Virginia while an attempt to do likewise failed in Montana. In West Virginia a proposal to provide for the election of two members of the Commission met with defeat, as did one in Massachusetts calling for the election of all members of the Commission.

Reversing a trend evident in other states, the Governor of Massachusetts sponsored a bill requiring that regulatory expenses be paid out of the state treasury instead of being contributed by the utilities regulated. Page Mr. Ripley!

A bill providing for the odorizing of natural gas failed to pass in Iowa while Kansas made the stealing of gas a misdemeanor.

Anti-Merchandising Legislation

Bills prohibiting public utilities to merchandise appliances were introduced in Arkansas, Arizona, Connecticut, California, Indiana, Massachusetts, Michigan, North Dakota, Pennsylvania, Texas and Wisconsin, a total of eleven states. None of these bills passed.

The California bill, which would have prohibited utility companies from selling appliances or from assisting in the financing of dealer sales, was tabled in committee after representatives of utilities, manufacturers, distributors and dealers appeared against it and pointed out its fallacies. This bill, it is understood, was presented at the request of the coal dealers' association.

A bill to repeal the 1931 anti-merchandising law in Oklahoma was introduced, after a resolution urging repeal had been adopted by the Oklahoma Press Association, but the repeal measure was killed.

Tax Legislation

The files of state legislatures have been jammed with proposals for taxation of all sorts and in nearly all states the utilities have been involved in the proposed increased tax burden. This was to be expected, considering the general shortage of revenues and the heavy demands for appropriations in these times. Everything considered, it may be said that the state legislatures have, for the most part, been not unduly unfair with the utilities, realizing that they are merely tax collectors from customers.

There is some hope in the thought that, with the enormous increase and multiplication of taxes of all sorts, the American people eventually will wake up to the fact that they are burdening their own pocketbooks by piling taxes on the public utilities.

Occasional evidence of an appreciation of this situation by a public official came to hand during the legislative season. As an instance of this, Governor Kump in his biennial message to the West Virginia Legislature said:

"Since my inauguration as Governor I have done everything that seemed possible to treat legitimate business in this state with every degree of consideration compatible with the public welfare. I have felt considerable impatience with garbled proposals designed to 'regulate' industry, copied hastily from the laws of other states, and too often introduced in this legislature in the spirit of punishment, reprisal and political aggrandizement. I am well aware of the abuses of large enterprises, and I am thoroughly conversant with iniquities that unrestrained competition, or unregulated monopoly, may bring on an unprotected citizenry. But I am also aware that our state has turned to her great economic groups for more than one-half of state aid with which to operate her free schools; that we depend on the public service corporations alone for some thirty-eight per cent of our local and state taxes; and that, in my judgment, our economic future depends upon creating an industrial environment in which enterprise—particularly the wage-paying industries—will seek location, secure from arbitrary unequal and discriminatory treatment."

Another such cheering incident was the following reference to taxation contained in Governor Martin's message to the Oregon Legislature:

"Private business through the nation has been compelled to get along on greatly reduced operating income in the face of extensive fixed operating cost in the past few years. It has generally been able to do so and survive. I see no reason why the state and local government cannot do the same if practical business economy and efficiency are employed.

"I do not see where we are going to get more tax money. Property is already taxed beyond the point of endurance; incomes and intangibles cannot be materially increased without jeopardizing the very existence of our business life; and the people have repeatedly voiced their disapproval of any form of sales tax. It must, therefore, be obvious to all that we must make a greater effort to get along with what we are now collecting."

Tax Base

In Kansas, Montana, Oklahoma, Texas and West Virginia bills requiring the tax base of utilities to be the same as the rate base failed to pass, as did one in Georgia placing the valuation for tax purposes at not less than 50% of rate base valuation.

The only measure of this kind known to have passed is one in Utah. This requires the valuation of utilities for taxing purposes to be made by taking into account the book value of their taxable properties but states that

(Continued on page 278)

Gas Exhibit at National Housing Exposition

Views of the Natural Gas Bureau's exhibit at the National Housing Exposition, Los Angeles, which attracted an estimated attendance of 250,000 visitors before closing June 9. The display, covering 4,100 feet of floor space, was made possible by the Southern California Gas Co., the Los Angeles Gas and Electric Corp., the Southern Counties Gas Co., and the cooperation of 18 gas appliance manufacturers. J. E. Kern, chairman of the Special Display Committee of the Bureau, was in direct charge of the display.

The Laboratory Approval Seal—Its Proper Use and Promotion

By E. R. ACKER

Chairman, Committee on Laboratory Approval Seal

THE Committee on Laboratory Approval Seal was appointed by President P. S. Young in February, 1935, to consider the matter of the proper use and promotion of the Laboratory Approval Seal on domestic gas-burning appliances, and to determine whether or not, in view of developments brought about in Laboratory testing standards, additional claims could and should be made for the Seal, thus stimulating a greater degree of public acceptance.

The committee as appointed by President Young included representatives of operating manufactured gas and natural gas utilities and appliance manufacturers in the United States and Canada, the American Gas Association Testing Laboratory, and the Publicity and Advertising Committee. In addition, your committee, in the course of its deliberations, solicited and obtained the opinions of a number of representatives of gas companies and manufacturers specially qualified by contact and experience to contribute to the discussion.

Recommendations of interest to the entire gas industry are contained in the accompanying report of the Committee on Laboratory Approval Seal, presented at the Executive Conference held at Atlantic City, May 31, 1935. The report was approved by the Executive Conference, ratified by the Executive Board at its meeting the same day and is now officially the policy of the Association. In addition to E. R. Acker, chairman, the following served on the committee which drew up the report: R. M. Conner, E. M. Farnsworth, Jr., John A. Fry, Holt Gurney, L. C. Harvey, Arthur Hewitt, B. J. Mullaney, Henry Obermeyer, W. T. Rasch and J. B. Tonkin.

At a meeting in Cleveland on April 23 all important and interested elements of the industry were represented in person or by authorized representatives or by letter setting forth their views. In presenting this report, your committee deems it highly necessary to review the recommendations made by a former special committee of the Association in 1928, under the chairmanship of B. J. Mullaney.

Appointed to consider the economic aspects of the Seal, Mr. Mullaney's committee reviewed the effect, at that time, which the Laboratory's operations had had upon the quality and sales of domestic gas-burning appliances. It concluded that the Laboratory's accomplishments up to that date had been of great value to the industry as a whole. It concluded, further, that the Laboratory program merited the complete and enthusiastic support of all gas companies and appliance manufacturers. In its investigation of Laboratory standards, it declared that these standards "are intended to assure safety first of all, and secondarily, a degree of durability and efficiency inseparable from adequate assurance of safety—nothing more." In addition, it stated, that the standards "represent the minimum of basic requirements for usable gas appliances and the Seal is only the visible evidence of compliance with those basic requirements."

Mr. Mullaney's committee then announced the principle that "a gas appliance that cannot pass the Laboratory tests, and therefore does not bear the Seal is not fit to be sold or used, and all practicable means should be employed to prevent the sale of it."

In addition to the above conclusions the Mullaney committee recommended that, "both manufacturers and merchandisers of appliances should accept this mark of Laboratory approval for exactly what it is, no more and no less—a guaranty of compliance with basic national standards of safety and should exploit its significance accordingly, until the appliance-buying public understands the exact significance of it." Finally, the committee recommended that an educational program be undertaken by the industry to advertise and promote the Seal in line with the above definition of the Seal's exact significance, and it also recommended that steps be taken to insure the prominent display of the Seal at fixed locations on approved appliances.

Since the review by Mr. Mullaney's committee, the Laboratory's approval requirements have been so materially strengthened that it has been felt by some members of the industry that additional claims could and should be made for the Seal. It is pointed out by others, however, that the Laboratory's approval requirements still permit the acceptance of appliances possessing a minimum number of convenience features; furthermore, that such appliances are generally of the less expensive type, and that the manufacturers producing such appliances make the greatest use of the Seal in connection with their advertising.

Your committee fully appreciates the fact that approval requirements have been raised considerably since 1928 and feels that this trend has been desirable. It does not believe, however, that the requirements have reached the point to justify increased emphasis on factors other than safety. On the other hand, the question has been raised as to whether or not the concept of the entire approval program should be enlarged to include quality, and whether or not the Seal should be promoted on that basis rather than on

the basis of minimum requirements.

It has been made clear to your committee that the Seal is not recognized as a mark of quality by the appliance manufacturers, and that any attempt to attach a quality significance to it will not be looked upon with favor by the manufacturers. In your committee's opinion, and in conformance with the findings of the Mullaney report, Laboratory standards and the Approval Seal should not be used or interpreted to indicate elements of superior quality. The inclusion of quality elements in appliances and the publicizing of their existence to prospective buyers should remain, as was recommended in 1928, problems to be solved distinctly by the manufacturer and the merchandiser.

Quality Elastic

The following observation in the Mullaney report is particularly pertinent—"Quality is an elastic term. The most elastic meaning of it as commercially used, never was, and never was intended to be implied by Laboratory approval of domestic gas appliances."

Your committee has been advised of the demand in some quarters for publicity and advertising campaigns to promote the public acceptance of the Seal, and to urge the public to demand approved appliances only. This matter was called to the attention of the Association in the report of the chairman of the Publicity and Advertising Committee at the 1934 Convention.

From the standpoint of creating public confidence, the belief is strongly held by many that the Seal should be widely and persistently promoted by gas companies, appliance manufacturers, and the American Gas Association. In this respect, your committee has heard testimony to the effect that the significance of the Seal is not properly understood within the gas industry itself and for that reason has not been sufficiently exploited.

Views on these and all other matters pertinent to this investigation have been communicated to your committee by the important and interested elements of the industry. After a complete review your committee has reached the following conclusions:

1. The necessity for basic standards covering the construction and performance of domestic gas-burning appliances is fundamental and is unquestioned.

2. The work of the American Gas Association Laboratory to date represents an outstanding accomplishment and an important contribution to the industry and its customers.

3. The approval requirements as fixed by the Laboratory committees to date are within reasonable and enforcible limits of safety, durability, and efficiency, but in the opinion of your committee do not justify the exploitation of the Approval Seal on any basis other than minimum requirements.

4. Your committee regrets to state that it does not find unanimity of understanding in the industry as to the significance of the Seal, as indicated by some lack of positive and affirmative promotion of its use.

5. The Approval Seal, contrary to the recommendations of the 1928 Committee, has not been prominently displayed in uniform locations on domestic gas-burning appliances.

Committee Recommendations

Your committee therefore recommends:

1. That the American Gas Association, in determining a policy as to the conduct of the Laboratory approval program, reaffirm and readopt the principle laid down by Mr. Mullaney's committee to the effect that "a gas appliance that cannot pass the Laboratory tests and therefore does not bear the Seal is not fit to be sold or used, and all practicable means should be employed to prevent the sale of it."

2. That as to the future, the Laboratory approval program be based upon the establishment of testing standards restricted to reasonable requirements of safety, durability and efficiency which will be supported by the majority of the interests involved and will, therefore, be readily enforcible. Attention is called to the fact that if the testing standards are materially strengthened to signify quality, an entirely different approach to the use and promotion of the program will be required. In this connection, the committee is not prepared to state that such change in the basic concept of the program would result in an increase in the sales of approved appliances.

3. That the Laboratory Approval Seal be displayed on domestic gas-burning appliances in a readily accessible and uniform location to be specified by the Laboratory Requirements Committee.

4. That the Association repeat its strong representations to the chief executives of its member gas companies and ask that they continue to limit their purchase and sale of domestic gas-burning appliances to those bearing the Laboratory Approval Seal where requirements therefor have been established.

5. That a subcommittee of the Publicity and Advertising Committee of the Association be appointed to take such steps as may be necessary and desirable to carry out such recommendations of your committee as involve the further use of promotional methods in obtaining a wider acceptance of the Seal.

6. That all member gas companies use every means at their disposal to interpret the true meaning of the Seal to their customers and cooperating dealers as a guide in the purchase of domestic gas-burning appliances.

April Gas Revenues

MANUFACTURED and natural gas utilities reported revenues of $62,357,100 for April, 1935, representing an increase of about 1 per cent from the figure of $61,724,600 for April, 1934.

Revenues of the manufactured gas industry aggregated $31,957,200 for the month, a decrease of 2.1 per cent from the corresponding month a year ago. Revenues of the natural gas industry, however, totalled $30,399,900 for April, or 4.5 per cent more than for April, 1934.

Domestic uses of manufactured gas continued to decline in April, dropping from 20,066,800,000 cubic feet in 1934 to 19,180,400,000 cubic feet during the current year, a loss of 4.4 per cent. Domestic sales of natural gas were practically unchanged at 29,132,100,000 cubic feet for the month.

Sales of both manufactured and natural gas for industrial-commercial uses, however, averaged about 9 per cent above the figures reported for April, 1934.

For the four months ending April 30, manufactured and natural gas revenues aggregated $271,073,400, an increase of 1.4 per cent over the first four months of 1934. Revenues from domestic customers declined slightly for the period. Revenues from industrial and commercial users, however, increased 7.1 per cent over the four months' interval of 1934

Interior view of greenhouse showing distribution of steam pipes for heating

Gas Solves Greenhouse Heating Problems

By J. B. NEALEY
American Gas Association

THE heating of greenhouses calls for a steam plant of great flexibility. Probably nowhere else is the steam plant engineer called upon to design an installation to meet constant fluctuations covering so wide a range in load. The glass roofs of greenhouses have a high thermal conductivity so that the least change in outside temperature registers almost immediately inside. In this characteristic it differs widely from the ordinary wood roof which is a good insulator in comparison, although far from ideal. A constant supply of fresh air of the correct humidity is necessary in a greenhouse and is admitted through the unsealed glass joints.

After being heated by steam pipes and humidified by evaporating water, this air is exhausted to the atmosphere through open vents in the top. For this reason a cold wind will immediately jump the boiler plant rating. Falling snow which must be melted as fast as it falls by keeping the glass warm, also calls for a large supply of steam. When the sun comes out, even in very cold weather (zero temperature), its warmth through the glass is so great the steam plant is shut down entirely. Due to the fact that there is no sun and much less wind the fluctuations in the night load are considerably smaller than those in the day load. Gas has been found to be the ideal fuel.

The U. S. Cut Flower Company, Elmira, New York, has 4½ acres under glass. This concern specializes in roses of the following 11 varieties: Briarcliff, Primier Supreme, Rapture, Templar, Talisman, Joanna Hill, Mrs. Herbert Hoover, Mary Hart, Better Times and White Killarney. It sells two and a half million cut roses annually in New York City and near-by markets as well as a quarter of a million grafted plants to other greenhouses. Elmira is located in New York State, in America's coldest belt running East and West. Climatic conditions here are severe in winter and weather fluctuations abnormal.

The original steam plant of the U. S. Cut Flower Company consisted of 7 coal-fired steam boilers rated at 100 horsepower each. They are of the horizontal return, fire-tube type and have been in active use for 32 years. Recently five of these were converted to gas firing by the installation of two gas burners in the firebox of each. With gas fuel it was soon established that five boilers would supply more steam than could all seven with coal. The plant is connected to 40,000 sq.ft. of steam radiation consisting of 10 or 11 long pipes extending the entire length of each house. A 10-in. header distributes the steam to all the pipes of all the houses along one end and a 3-in. return at the other end brings the condensate back to the boilers by gravity. The heating pipes are located 18 in. above the floor in the walks between the concrete benches and each is valved close to where it takes off from the header. By means of these valves the attendants control the temperature of the individual houses, and this temperature must not rise or fall beyond the limits of 64 to 76 deg. F.

Multiple Gas-Air Port Burners

The boilers are arranged in a single row with the stack underneath and dampered ports are located in the refractory walls between the fireboxes, through which the waste gases are exhausted. The gas burners installed are of the multiple gas-air port type with a swing plate for controlling the volume of air for combustion. Each burner consists of a cast-iron manifold in the form of a flat rectangular box with a dozen two-inch holes through which the air enters the firebox from outside. Gas is introduced into the manifold and passes out into the air holes through small ports. Here it mixes with the air and burns with long yellow flames in the firebox. A multiport tile block protects the burner from the furnace heat.

A constant steam pressure is maintained in the boilers by individual controllers connected with an automatic master control. The individual controllers each consist of twin hydraulic cylinders which perform the triple functions of opening and closing a valve in the gas line to the burners, the shutters on the burners and the dampers in the ports leading from the firebox into the stack. The gas valves are of the three-position throttling

type. The master control consists of a diaphragm and motor and operates with steam on one side and a spring on the other. When the steam pressure rises above that for which the control is set, the moving piston acts to open valves in a water line to the hydraulic cylinders of the individual controllers which close or partially close the gas valves, air shutters and stack ports. Conversely when the pressure drops the master control lets water into the opposing cylinders with the opposite effect.

When these burners were installed the fireboxes were lined with firebrick and the bridge walls were replaced with refractory checkerwork to divert part of the heat to the front of the boilers. This checkerwork consists of a single row of bricks, 4 high with opening between. This is located 3½ ft. in front of the burners, and the bricks are placed at slight angles so that some of the edges are closer to the burners. These become incandescent and thereby increase the rate of combustion. So perfect is the combustion that a CO_2 content of 9.6 to 10 is maintained as against a theoretical 11.8% when operating at full load. The furnace draft at these times is .12 in. water pressure.

Figures on fuel consumption show the average consumption of rice anthracite coal was 3,000 tons per year.

Battery of 5 gas fired steam boilers which do the work of 7 coal fired boilers

The average gas consumption per year over a three-year period was 58,660 M cubic feet. The heat value of the coal used was 12,000 B.t.u. per pound and the gas 1,020 B.t.u. per cubic foot.

Prior to the use of gas it was impossible to operate the boilers at 100% of rating while now they are run at 175% of rating. Burnt out tubes were a constant factor with coal but with gas not a single tube has gone bad in 3 years' service. With coal flexibility was an almost unknown quantity with the slow process of making and banking fires and much fuel was wasted on that account. With gas the response to a call for more steam is almost instantaneous and when less steam is desired the turndown is accompanied by a quick drop in fuel consumption.

Chicago Water Heater Sales Break Record

AN indication not only of improved buying power but of awakened interest among Chicago home owners in the matter of home comfort is seen in the record-breaking sales of automatic gas-fired water heaters achieved in a cooperative campaign by The Peoples Gas Light and Coke Company and neighborhood plumbers.

The total of slightly more than 600 water heaters sold during the month of April broke all records for any single month, and May sales broke the previous record, with 800 automatic water heaters added to the company's lines.

The campaign, begun early in the year, is being watched by gas utility men as well as plumbers and hardware dealers in other cities as an outstanding example of successful cooperation between a public utility and neighborhood plumbers. The Peoples Company, instead of competing with plumbers and taking their business away from them, is helping them to sell and show profits through cooperative advertising, sales promotion plans, and window display materials.

Another important sales producing item that contributed successfully to the campaign, was the part played by gas company employees, in turning in water heating prospects. All employees of the company were urged to participate in the campaign for prospects, and they came through again, as they have in other campaigns.

Employees of the company turned in a total of 1,339 prospects during the campaign, up to May 17. From these prospects, 501 water heaters were sold and installed, or 37.42 per cent of the total. Employees received a commission for every sale resulting from their prospects.

One reason for the unusual success of the campaign is the liberal rental terms offered, the low monthly rental applying on the purchase price of the heater when the renter decides to buy.

A survey made preliminary to the campaign by the water heating division of the gas company, to help the plumbers in their selling effort, indicates that there are a large number of good prospects among the 295,000 single-family, two-apartment, and three-apartment buildings in Chicago.

Commenting on the campaign, C. H. Light, manager of water heating sales for The Peoples Gas Light and Coke Company, who has sponsored the cooperative campaign, said:

"Results have shown the soundness of the cooperative sales method. The volume of sales is particularly gratifying when it is considered that the campaign was begun early in the season, before the sales peak might be expected to be reached, and that the best selling months are still ahead of us."

A. G. A. Convention To Meet in Chicago

At a meeting of the Executive Board of the American Gas Association, held at Atlantic City, May 31, Chicago was selected as the meeting place of the Association's 17th annual convention, the week of October 14.

Headquarters will be at the Palmer House, where accommodations sufficient to take care of a large and representative gathering of gas industry men and women have been reserved. The Palmer House is centrally located in Chicago's famous Loop district. Individual reservations should be made by writing direct to the hotel.

Plumbers Join Utility in Successful Cooperative Campaign

A TRULY cooperative campaign by a group of master plumbers and the local utility company resulted in a surprising volume of business for both plumbers and the gas company on an automatic water heater rental plan at Rockland, Illinois, last year.

During a period slightly over a year in duration over $20,000 worth of plumbing business has been developed that would never have been had except for the ambitious program of the Central Illinois Electric and Gas Company, and the cooperation of the Rockford Master Plumbers' Association.

The campaign got under way on October 19, 1933, and by October 19 of the following year, over one thousand heaters had been installed whereas sixty heaters was a year's average before. This has meant thousands of dollars in installation work for the master plumbers of Rockford in addition to several thousand dollars in selling commission to them.

Plumbers Were Skeptical

When the plan was first evolved, the Central Illinois Electric and Gas Company called in the merchandise committee of the Rockford master plumbers' organization and A. P. Lewis, sales manager, presented the plan to them. At first, the plumbers were a bit skeptical about the benefits they might derive from attempting to cooperate with the local utility which was often considered by them as a competitor. Cooperative plans in the past had not been successful so they were a bit wary about going ahead.

After the plan was presented to them in detail, however, and satisfactory answers given to the plumbers' questions, twenty-two local master plumbers agreed to sign an agreement with the utility on the automatic water heater rental plan.

The chief features of this cooperative plan included the installation of all heaters by the plumbers, a commission on all heaters where plumbers made the sale or turned in the prospect's name, utility company salesmen to assist in closing sales, utility handled financing of sales, full maintenance and service of all heaters by utility at its expense, and a generous amount of advertising by the gas company.

Flat Charge for Installing

A flat charge was established for the installation work on all heaters. This charge was allowed to the cooperating plumbers only and was given to them regardless of the source of the sale. The gas company delivered all heaters to the installation address and notified the plumbers as to the date of installation. Checks covering installations and bonuses were mailed out by the utility company at the beginning of each month.

In addition to the installation fee, it was possible for the plumber to realize an additional amount of money if he was responsible for the sale. If he made the sale directly or if he had turned in the name of the prospect to the company and one of their salesmen completed the sale, he was still entitled to an additional bonus. A prospect file was kept in the office of the gas company and complete protection was given the plumber on his prospect for a period of sixty days. An extension of sixty days was granted also if the plumber wished to re-register the prospect.

The gas company employed and paid four salesmen to work on water heater sales exclusively under the direction of H. S. Oyen. These men were given territories and were protected on all sales in their territories and were given the same selling commission on every heater installed in their territory regardless of how the sale originated. This was done so that there would be no conflict between cooperating plumbers and salesmen over commissions. With a protected territory set-up, the salesmen were just as anxious to close a prospect turned in by a plumber as one he originated himself or one furnished through the utility company. In all cases, the cooperating plumber was given the same selling bonus if the gas company salesmen sold his prospect or if he personally closed the deal.

Whenever the gas company sold a heater and no plumber was involved in the sale, the installation of the heater was assigned to a plumber in alphabetical order from the list of those signing the agreement. Thus the plumbers were sure to get the installation fee for all heaters sold and the flat installation charge was allowed when the heater passed inspection.

Gas Company Made Collections

All sales on the heater rental plan were worked on regular rental contract forms of the gas company with the utility being responsible alone for the collection of rental fees. A down payment of $1.00 was made at the time the rental contract was signed and the monthly rental of $1.25 was payable with the gas service bills during the period of the rental contract.

If the customer decided to purchase the heater at any time during the rental period, the rental payments were credited to the purchase price. A purchase during the first year entitled the buyer to a 10% discount from the total price and a purchase after the first year entitled the purchaser to a discount of 10% from undue balance.

In addition to the rental plan, the plumbers were privileged to buy water heaters from the gas company's stock at storeroom cost, plus 10%. The plumber had to agree to sell water heaters purchased from the gas company at the regular cash installed price so that price cutting was not possible.

Maintenance and servicing of all heaters was done by the gas company at its own expense during the rental period. A substantial and excellent advertising campaign prepared by Bozell & Jacobs, the utility company's

Reprinted from the "Illinois Master Plumber."

advertising agency, was launched by the gas company. In all copy, the prospect was asked to see his cooperating master plumber or any employee of the gas company. The company also furnished the heaters for floor and window displays and plumber window displays were tied in with the gas company display windows without cost to the plumbers. Street cars, busses and trucks carried the message of automatic hot water.

Installation and sales schools where plumbers and salesmen met together and discussed methods of selling and promoting the rental gas water heaters were held at intervals to keep the campaign moving.

With a full 100% cooperation on the part of both plumbers and the gas company, the plan worked out beyond everyone's expectations. All problems that came up from time to time were settled to the satisfaction of all and a friendly cooperative feeling between the gas company and local plumbers has been developed which should work for the good of all in the development of future business. With the field still fertile, the plan is still in effect and a great number of sales is expected during 1935.

Research Started on Domestic Gas Appliances

P. S. YOUNG, president of the American Gas Association, has appointed a Committee on Domestic Gas Appliance Research which is charged with the duty of investigating the present status of domestic gas appliances and of conducting various research projects in connection with domestic uses for gas. These projects will be designed to develop fundamental data and practical applications which will raise the general level of performance of cooking, heating water, and performing other domestic services with gas.

The committee is composed of executives who are familiar with the problems involved and who represent a cross section of the country supplying manufactured, natural and mixed gases and the manufacturers of domestic gas appliances. The following men constitute the committee:

F. J. Rutledge, *Chairman,* The United Gas Improvement Company.
Walter C. Beckjord, Columbia Gas and Electric Corporation.
Henry Behrman, The Brooklyn Union Gas Company.
R. L. Fletcher, Providence Gas Company.
John A. Fry, Detroit-Michigan Stove Company.
J. P. Hanlan, Public Service Electric & Gas Company.
R. B. Harper, The Peoples Gas Light & Coke Company.
W. T. Rasch, American Gas Products Corporation.
Thomas E. Roach, Washington Gas & Electric Company.
N. T. Sellman, Consolidated Gas Company of New York.
W. W. Winter, Atlanta Gas Light Company.
Wesley F. Wright, Dallas Gas Company.
E. D. Milener, *Secretary,* A.G.A. Headquarters.

The committee is making intensive studies of contemporary cooking practices and has authorized the A.G.A. Testing Laboratory to make a three to four months' study to determine the maximum performances of contemporary ranges under varying conditions. This is being backed up by necessary tests. A broader program is being planned, the details of which will to a large extent be influenced by the results of the first three months' tests.

In discussing this research work, Chairman Rutledge stated: "Raising all domestic gas appliances to the maximum possible level of performance and reducing operating cost to the lowest practicable point is an industry project and the work of this committee represents an industry attack on the problem. I wish to make it clear that the Executive Board and the committee are unanimous in laying down the principle that this work will be conducted at all times in such a manner that appliances will be designated as types only. It is also agreed that none of this research work will be designed toward or will be executed along lines to promote any particular make or type of range. Any new developments which result from these research activities will be available to all member manufacturers for their use."

It is expected that, as the work progresses, the facilities and inventive genius of manufacturer company members of the Association will be called upon to supplement the basic combustion research and extensive testing conducted in the Laboratory.

Miss Swann Joins Magazine Staff

Ada Bessie Swann

MISS ADA BESSIE SWANN, for many years home service director of the Public Service Electric and Gas Company, Newark, N. J., resigned last month to accept a position with the Crowell Publishing Company. Miss Swann began her new duties as director of the Food and Equipment Experimental Center of *Woman's Home Companion* on June 17.

Under Miss Swann's leadership, home service work in the Public Service Company made notable progress and proved highly effective. She was a pioneer in radio broadcasting, her department being among the first to go on the air to reach the home.

Miss Swann was instrumental in the organization in 1923 of the Home Service Committee under the Commercial Section of the American Gas Association. She was the first chairman of the committee and served for three years. She has been continuously active in the Association's home service program since that time.

Housing Survey Proves Gas Sales Aid

A HOUSING survey, recently completed in Kansas City, Missouri, among other things, supplied the local gas company with a large amount of valuable and accurate information which would have been difficult, if not impossible, to secure otherwise, according to reports from F. M. Rosenkrans, new business manager.

The survey not only gives the saturation of various gas appliances but also shows the geographic distribution and saturation throughout the city. Other information made available as a result of the survey is expected to be of the greatest value to the company in planning for promotional sales programs.

The housing survey was organized as a Missouri Relief and Reconstruction Commission project, under the auspices of the Jackson County Emergency Relief Committee and the City Plan Committee.

A field survey coordinator of the Washington office of the FERA assisted in the organization of the project, and gave advice and counsel throughout the survey. It was carried out in connection with the Missouri ERA Non-Manual Works Program, and approximately 320 "white collar" relief workers were employed to perform the actual enumeration and compilation of the information obtained.

At the bottom of the forms used in the survey, arrangements were made to secure all information pertinent to gas equipment in use in the community, this being added to the original printed form.

George B. Cortelyou Retires from Active Service

AFTER twenty-six years of continuous service as president of the Consolidated Gas Company, of New York, George Bruce Cortelyou, who served under three Presidents of the United States, will retire July 1 under a plan and compensation adopted by the board of trustees at a meeting June 4. The plan, applicable to all employees and officers of the company and its affiliated gas, electric and steam units, will affect approximately 200 others immediately and more as they reach seventy years of age.

The trustees elected Frank W. Smith to succeed Mr. Cortelyou, now seventy-three years old. Mr. Smith is president of New York Edison Company and the United Electric Light and Power Company. O. H. Fogg, vice-president of Consolidated Gas and New York Edison, was elected executive vice-president of the parent company.

New Retirement Plan Adopted

The plan as adopted by the trustees has been under consideration for many months under the direction of Mr. Cortelyou. The company has had in effect for many years a superannuation plan applicable to employees and officers who have completed twenty-five years of continuous service. The new plan follows the general principles of the old one, except for the requirement of compulsory retirement.

Frank W. Smith

George B. Cortelyou

Besides Mr. Cortelyou, five other officers of the system will retire on July 1. H. L. Snyder, president New York and Queens Electric Light and Power Company; W. G. Hoyt, president the Standard Gas Light Company; E. S. Bellows, treasurer Westchester Lighting Company, and the Yonkers Electric Light and Power Company; C. A. Barton, vice-president New York and Queens Electric Light and Power Company, and John A. Garver, a director and member of the executive committee since 1918 of Consolidated Gas, will resign on account of age.

Mr. Cortelyou is the fourth president of Consolidated Gas Company. Joining the organization in March, 1909, as president and trustee, after he retired as Secretary of the Treasury in President Theodore Roosevelt's Cabinet, Mr. Cortelyou saw the utility grow from an organization of 11,000 employees to one employing more than 45,000. The assets of Consolidated Gas have increased during his presidency from $332,324,856 in 1909 to more than $1,300,000,000 in 1934.

When the American Gas Association was formed in June, 1918, by the amalgamation of the American Gas Institute and the National Commercial Gas Association, Mr. Cortelyou became its first president. He was re-elected the following year and, until recent years, served continuously on the Executive Board of the Association. In 1926, he headed a committee of the industry's foremost men which set up a five-year program of Association activities which proved highly successful. Mr. Cortelyou has the distinction of being the only person to serve as president of both the American Gas Association and the National Electric Light Association. He was president of the N. E. L. A. in 1932 and later became president of its successor, the Edison Electric Institute.

Ancestors Distinguished

Born in New York City on July 26, 1862, of ancestors distinguished in

Oscar H. Fogg

80 Park Place,
Newark, N. J.,
June 7, 1935.

Mr. George B. Cortelyou,
4 Irving Place,
New York, N. Y.

Dear Mr. Cortelyou:

I do not know whether or not you realize it but there is no doubt that the success of the American Gas Association since its organization, and the fine spirit exhibited at Headquarters and among its members, is largely due to your leadership in its early years.

The members of the Association, however, realize it. You have always held a high place in their counsels. It was, also, exceedingly interesting to know that the Edison Electric Institute, at their meeting Wednesday night gave testimony both of their indebtedness to you and their respect for your outstanding accomplishments.

On the part of the American Gas Association, I hope you will remember that the Association is comprised of your friends who will always be interested in the useful services which we know you will continue to perform notwithstanding the fact that you are separating yourself from the more arduous duties of business life.

Sincerely yours,

P. S. YOUNG

Colonial and Revolutionary history in the state of his birth, Mr. Cortelyou received his early education in the public schools and the Nazareth Hall Military Academy at Nazareth, Pa. He was graduated from the Hempstead Institute, Long Island, in 1879, and from the State Normal School, Westfield, Mass., in 1882. Mr. Cortelyou entered the New England Conservatory of Music at Boston, and also studied under Dr. Louis Maas, former conductor of the Philharmonic Society of Boston. He continued his study of music in New York during 1884 and 1885 and also attended Walworth's Stenographic Institute. As a result of his stenographic training he entered government service in 1884 in the office of the Appraiser of the Port of New York. He was later a general law reporter and the principal of a private school.

Mr. Cortelyou became associated with the Post Office Department in 1889 as private secretary to the post-office inspector in charge at New York City. He was later a confidential stenographer to the surveyor of the Port of New York.

In 1891 Mr. Cortelyou moved on to Washington when he became private secretary to the Fourth Assistant Postmaster General. In November, 1895, he was transferred to the Executive Mansion as stenographer to President Grover Cleveland, and three months later he was made executive clerk to the President.

He was made assistant secretary to President William McKinley in 1898 and in 1900 he was appointed secretary to the President. He was with the Chief Executive when he was shot down by an assassin in Buffalo. Mr. Cortelyou was in general charge of the arrangements attending the illness, death, and burial of President McKinley.

The personal affection which Mr. Cortelyou held for President McKinley has continued to this day. Each year on the anniversary of President McKinley's birth, January 29, Mr. Cortelyou has sent to the officers and department heads of the utility a red carnation, President McKinley's favorite flower.

4 Irving Place,
New York City,
June 11, 1935.

Mr. P. S. Young, President,
American Gas Association,
420 Lexington Ave.,
New York, N. Y.

Dear Mr. Young:

Your letter of the 7th instant has been received and I greatly appreciate what you are good enough to say with respect to my retirement.

Your generous reference to my work in the early days of the American Gas Association and in the industry generally touches me deeply. I have always had a natural interest in the accomplishments of the Association and have been pleased with its increasing usefulness in the utility field. Aside from my part in its organization, it has been a source of satisfaction to me that the recommendations of the committees on the Three-Five Year Program have been found to be valuable and forward-looking. By restricting its activities to the things most essential to the industry and doing them well, it has made a name for itself among such organizations, and I have every confidence that it will continue to make steady progress. Its executives have been men of outstanding ability, and a large measure of credit is due to the loyal and efficient Headquarters staff, to which I gladly pay high tribute.

Thank you for your letter and with heartiest congratulations to you on your administration, believe me. With warm regards and best wishes.

Sincerely yours,

GEORGE B. CORTELYOU

Made Cabinet Member

Mr. Cortelyou continued as secretary to the President under Theodore Roosevelt until 1903, when he entered the Cabinet as the first secretary of the newly created Department of Commerce and Labor. In June, 1904, he resigned to become chairman of the National Republican Committee, in which capacity he conducted the campaign which resulted in the election of President Roosevelt.

In March, 1905, Mr. Cortelyou entered the new Cabinet as Postmaster General and served until March, 1907, when he became Secretary of the Treasury, in which position he served until the end of the Roosevelt administration, when he began his utility career, which has been a very notable one.

When in Washington, Mr. Cortelyou studied law at Georgetown University and was graduated with the degree of Bachelor of Laws in 1895. He completed a postgraduate course in law at Columbia (now George Washington) University Law School in the following year and received the degree of Master of Laws. His honorary degrees include doctor of laws, Georgetown University, 1903; Kentucky Wesleyan University, 1905; University of Illinois, 1905, and George Washington University, 1932.

Mr. Smith, new president of Consolidated Gas, has a distinguished utility career back of him. He has been quite active in the industry for more than fifty-five years, having started with the United States Illuminating Company, one of the earliest arc-lighting organizations. He was a pioneer in the development of alternating current.

After serving in many capacities with the United Electric Light and Power Company, Consolidated Gas affiliate, Mr. Smith became vice-president in 1916 and vice-president of New York Edison in 1931. In January, 1932, he was made president of both companies.

Mr. Smith is widely known in the utility industry having served as vice-president in 1919 and president in 1922 of the National Electric Light Association.

Poison in Word-Labels

B. J. Mullaney

BUSINESS has been getting forceful high-lights in education concerning the poison latent in carelessly accepted word-labels. Acts are of limited significance until interpreted in words. The words then gather implications and connotations as they travel and their power, in a population susceptible to catch-words and slogans, is made explosive by the news-headline, the movie and the radio.

"Capitalistic"—to the man in the street the word is packed with inimical suggestion: a serious matter when the poison word becomes the accepted label of a spontaneously evolved social and economic order.

Progress toward real Industrial Democracy has been impeded if not blasted by acceptance of the term "company union" as the label of friendly collective bargaining as opposed to hostile bargaining.

The damning word "monopoly" has been a blight to the public utilities; probably most of their current troubles are traceable to this source. It exalts for example the demagogue pretense that rate crusades spring from a noble aspiration to "ease the cost-of-living burden." Easing the burden by whittling the smallest item in it whilst increasing the larger ones! Public utilities are correctly called "natural monopolies," when the term is used with academic precision in the strictly economic sense—meaning that the business is properly and inherently one of single service in a given area. In common usage, the adjective disappears and the stark noun gathers all the sinister implications and connotations spawned by efforts to establish oppressive artificial monopoly in other fields. To the man in the street, "monopoly" means just one thing—a means of gouging him by greedy control of production and prices.

Fairly considered, public utility services do not fit into that mental picture. They cannot be stored for a price rise; they have to be produced and delivered as wanted; nobody "has to have them," and just because they are natural monopolies they are properly and necessarily subject to public control, and exposed to expropriation.

There was no "monopoly" advantage at work when kerosene displaced candles and whale oil; when gas lighting displaced kerosene; when gas fuel superseded wood and coal in urban kitchens; when electric light displaced gas light; when the trolley car superseded shank's mare and the horse and buggy; when telegraph and telephone began competing with mail and messenger.

Electric service is talked about as if it were an existent, natural resource that has been filched from "the people."

Electricity really does not exist (except the "wild" electricity of thunderstorms) until somebody couples a generator to a prime mover (engine or water fall) and produces it. Anybody who wants to can make his own—in his store, office, factory, basement or back yard. Many do. It doesn't become a "universal necessity" until excellence of service, advertising and salesmanship make people want it through the medium of a single service under their control.

In the perverted everyday meaning of "monopoly," public utility services are no more of a monopoly than spring wheat, kitchenettes, or coonskin coats. Every kilowatt hour of electricity, cubic foot or therm of gas, street car ride, telephone call, or telegram bought by the user, is bought only because it is cheaper, more convenient, more efficient, or otherwise more desirable than something else that he could use for the same purpose.

The point of all this is that Business ought to wake up and realize that concentration on strictly market-place considerations exposes it to getting hit below the belt. It must learn that advance attention to the kind of government we have is a fundamental business concern. It must learn that it deals with popular conceptions of economics and with mass psychology as well as with mere bookkeeping. It must realize that rhetoric is as important as statistics.—*B. J. Mullaney.*

Reprinted from *The Magazine of Wall Street*, June 8, 1935.

Advertising Viewed as Major Problem at P. U. A. A. Meeting

J. R. PERSHALL, of Chicago, advertising manager of the Public Service Company of Northern Illinois, was elected president of the Public Utilities Advertising Association at that organization's recent Chicago convention held in connection with the annual meeting of the Advertising Federation of America. Mr. Pershall succeeds Henry Obermeyer, Consolidated Gas Company of New York, who was elected a director.

D. D. Parry, Central Hudson Gas & Electric Corporation, Poughkeepsie, N. Y., was elected first vice-president; Kenneth Magers, Union Gas & Electric Company, Cincinnati, second vice-president; and Charles A. Tattersall, Niagara-Hudson Power Corporation, New York, third vice-president.

H. W. Olcott, Philadelphia Gas Works Company, was re-elected secretary and Howard F. Weeks, Consolidated Gas Company of New York was re-elected treasurer.

In addition to Mr. Obermeyer, who as past president becomes a director for a one-year term, three new directors were named for three-year terms. They are Al. C. Joy, Pacific Gas & Electric Company, San Francisco; S. J. Ballinger, San Antonio Public Service Company; and Clara Zillessen, Philadelphia Electric Company. This is the first time that a woman has been elected to the board.

In his brief opening remarks at the public utility session June 11, Mr. Obermeyer declared that utilities are more and more regarding advertising as a major part of utility operation, the effort in a great many cases today being directed by presidents of the companies.

The report of the Better Copy Contest Committee was presented by D. D. Parry, Central Hudson Gas & Electric Corporation, Poughkeepsie, N. Y. Gas company winners of the 1935 advertising awards were announced as follows:

Gas Newspaper Advertising Institutional
- First Prize: Washington Gas Light Company
- Second Prize: Public Service Electric & Gas Company (New Jersey)

Gas Newspaper Advertising Load Building
- First Prize: Central Hudson Gas & Electric Corporation
- Second Prize: Union Gas & Electric Company

Gas Newspaper Advertising Appliances
- First Prize: Northern States Power Company
- Second Prize: Consolidated Gas Company of New York

Newspaper Campaign Advertising Appliances
- First Prize: Consolidated Gas Company of New York
- Second Prize: The Hartford Electric Light Company

Gas Window Display Advertising
- First Prize: Kings County Lighting Company
- Second Prize: Consolidated Gas Company of New York

Gas Poster Advertising
- First Prize: British Columbia Electric Railway Company Limited

The subject of cooperative advertising, between the dealer and utility and the manufacturer and utility, was developed by A. C. Joy, of the Pacific Gas & Electric Company, San Francisco, in an illuminating presentation of how that company conducts this part of its advertising program. The success of participating with the dealer for a more effective merchandising job is indicated in figures Mr. Joy gave for 1934 which showed dealer sales of electric and gas appliances of $17,400,000 against $1,300,000 for company sales. These figures do not include electric refrigerators, which are not sold by the company.

Dealers Made Advertising Minded

The company has made appliance dealers in the territory it serves advertising minded through monthly bulletins which show the newspaper copy, outdoor advertising and window displays scheduled for the month. These bulletins are also sent to advertising managers of newspapers in the territory so they may approach dealers to tie in with the program.

The plan has worked with considerable satisfaction. The company has found that better results have come from its advertising appropriation by splitting it up and encouraging the dealer to spend some of his own money along with it, incidentally increasing the total amount of space and aiding the entire appliance sales situation. In this plan the dealer gets additional advertising help from appliance manufacturers as well. Charts which Mr. Joy displayed graphically showed the favorable results obtained.

In cooperation with the FHA program Pacific Gas pays one-third of the dealer's advertising on appliances which can be financed through the FHA. All such copy must feature the FHA plan and prominently display the identifying emblem.

There are several organizations supported by various branches of the industry which also carry on promotional advertising campaigns on the coast with effectiveness.

Some interesting revelations were made by J. C. Barnes, publicity director, New Orleans Public Service, Inc., in his paper on "A Study of Production Costs in Relation to Space Costs in Public Utility Advertising."

The average public utility, he said, spends 9.5 per cent of its total newspaper advertising budget on production costs. Newspaper advertising represents 65.3 per cent of the total budget. The figures were derived from reports of 38 gas, electric and combination companies. In eight of the companies which have their work done by agencies, production costs run 11.7 per cent of the newspaper advertising budget. A large number of those reporting use mat services, this being common among the largest users of newspaper space. The average amount of space used by nine of these companies is approximately 750,000 lines. Their average production cost is 9.6 per cent.

The consensus of the 38 advertising executives is that production costs could economically consume an average of 14.9 per cent of the space cost, or an increase of five per cent. It was recommended that a "Costs and Results Committee" be appointed to report on all phases of public utility advertising costs.

Urges Transcription Programs

Speaking on "Radio Advertising for Utilities," C. A. Tattersall, assistant vice-president, Niagara Hudson Power Corporation, urged the syndication of worthwhile radio transcription programs for utilities. His company, he asserted, is convinced that the radio has helped to put into its companies something of the warmth and friendliness which a popular stage star can radiate, a human quality which he considers essential to an understanding with the people the company serves.

"We have found," he said, "that it is in this human quality that the spoken word is often superior to the printed word in building goodwill and the business that comes with it."

During the luncheon several of the radio transcriptions alluded to were played. These were arranged by Batten, Barton, Durstine & Osborn, Inc.

The afternoon session opened with a talk by W. H. Hodge, vice-president, Byllesby Engineering and Management Corporation, Chicago, in which he asserted that "all over the country today large numbers of people are tired of generalities and disgusted with alleged schemes for the public benefit which have gotten nowhere; that they are thinking and thinking hard, and that they will appreciate serious discussions of utility fundamentals. Also, I believe that it is up to our advertising people to take the initiative, plan accordingly, and convince their managements that such is the right course to follow. No advertising brains in the country are too big for this job.

"It seems to me that when a rate reduction is made, that is the particular time when management should present its facts to the public—should comprehensively mobilize its facts and call in

the people for a general review with flying colors."

Chester H. Lang, president of the A. F. A., addressed the group in the afternoon. Also on the program was a description of a utility consumer survey in the Chicago metropolitan area, by L. E. Scriven, research director of Lord & Thomas.

Resolutions Commend Work of Natural Gas Committees

F. L. Chase

AT the highly successful convention of the Natural Gas Department of the Association, held in Memphis, Tennessee, ending May 9, the Committee on Final Resolutions commended the efforts of the officers of the department, headed by J. B. Tonkin, chairman, William Moeller, Jr., and A. E. Higgins, secretary, and offered the following resolutions which were unanimously adopted:

RESOLVED, That appreciation is hereby expressed of the untiring efforts of the officers and members of the Memphis Power and Light Company in making the convention a success. We wish to commend the work and the efforts of W. J. O'Brien, chairman of the General Arrangements Committee; J. B. Tonkin, chairman of the Program Committee; J. J. Brennan, chairman of the Local Entertainment Committee; Mrs. W. J. O'Brien, chairman of the Hostess Committee, and the Memphis Chamber of Commerce; and

BE IT FURTHER RESOLVED, That this committee deems it particularly appropriate to submit in these resolutions an expression of appreciation for the continued splendid work being carried on by the Main Technical and Research Committee and its subcommittees under the very able and efficient leadership of H. C. Cooper, and that special thanks be extended to the United States Bureau of Standards for their cooperation.

This committee is also desirous of expressing appreciation for the outstanding work that has been accomplished by the Subcommittee on Gas Measurement headed by T. R. Weymouth, and the Subcommittee on Pipe Line Flow under the leadership of H. D. Hancock, and to the Subcommittee on Distribution Conservation under the very able leadership of T. H. Kerr, and to all members of these committees, we express our thanks; and,

BE IT FURTHER RESOLVED, That the entire membership of our Association express their appreciation for the untiring efforts and the splendid work that has been carried on for so many years by the Subcommittee on Gas Well Deliveries under the efficient leadership of N. C. McGowen; and special thanks are expressed to E. L. Rawlins of the United States Bureau of Mines, for his extremely fine work and cooperation with the committee; the contributions that the gentlemen of this committee have made to the natural gas industry will never be forgotten, and to them we pay our tribute and express our sincere thanks.

A special resolution expressed the deep appreciation of the Natural Gas Department for the splendid cooperation, help and assistance of the United States Bureau of Mines in solving the many technical problems of the industry, was also unanimously adopted. The text of the resolution follows.

THEREFORE, BE IT RESOLVED, That it is the wish of the natural gas industry at this convention to go on record as expressing their sincere appreciation of the value we as an industry place on the assistance rendered by the Bureau of Mines; that we wish to recognize the great benefits to this Association, to the industry and to the public it serves, and

BE IT FURTHER RESOLVED, That the natural gas industry wishes to especially thank Dr. John R. Finch, director of the Bureau of Mines and his very able staff for their outstanding work and assistance to our industry.

The Committee on Final Resolutions was composed of F. L. Chase, Chairman, T. J. Strickler and George E. Welker.

Oppose Holding Company Bill

AT a meeting of the Executive Board and Advisory Council of the American Gas Association, held in Atlantic City, N. J., May 31, the following resolution was adopted:

Whereas, there is pending and now under debate in the Congress a measure known as the Public Utility Act of 1935, introduced in the Senate by Senator Wheeler of Montana and in the House of Representatives by Congressman Rayburn of Texas, imposing a sentence of death upon public utility holding companies, regardless of the extent of service to the industry and the public; and

Whereas, said bill if enacted is likely to cause heavy losses to investors both in public utility holding companies and in natural gas and manufactured gas operating companies due to enforced liquidation preceding the proposed dissolution; and

Whereas, the provisions of the measure seriously impair and probably to a considerable extent destroy the regulatory powers of the sovereign States; and

Whereas, the bill as proposed in the House embodies further extraordinary encroachments of Federal regulation upon companies engaged in the gas industry; and

Whereas, the natural gas industry in convention assembled in Memphis, Tennessee, on May 9 unanimously agreed to a resolution to the effect that the passage of the Wheeler-Rayburn Bill would be disastrous to that industry and against the public interest; THEREFORE BE IT

Resolved, that the Executive Board and Advisory Council of the American Gas Association in meeting in Atlantic City, New Jersey, on May 31, 1935, protest any such legislation; AND BE IT

Further resolved, that copies of this resolution be forwarded to the President of the United States and to members of appropriate committees of the Congress.

Texas College Announces Gas Engineering Course

BEGINNING with the fall semester of 1935 the Texas College of Arts and Industries, through its Division of Engineering, will offer a four-year course in Natural Gas Engineering. This course will have as its primary purpose the training of students to enter the natural gas industry in any of its many technical divisions. Courses will be offered in production, transmission and distribution of natural gas. Although the training will be of specialized nature, the curriculum will be sufficiently broad to enable the student to secure thorough grounding in mathematics, sciences and engineering fundamentals, in addition to the more specialized courses. The Texas College of Arts and Industries, because of its strategic location, is ideally situated to offer training in this field. Several gas producing fields which are within easy reach of the college will be used extensively for experimental and observational purposes.

The Division of Engineering has already established a splendid record of achievement in training students in general engineering. The training in natural gas engineering will augment the training that is now being offered. New courses will be added in chemistry of fuels, geology, production, transmission, measurement and distribution and uses of natural gas. The student will be provided ample opportunity to do research along many lines paralleling the problems arising in the natural gas industry.

Each year a short course will be conducted, where problems pertaining to the industry may be presented for discussion. All interested persons and industries will be invited to participate.

For further information write: J. O. Loftin, President, or R. L. Peurifoy, Head of Division of Engineering, Texas College of Arts and Industries, Kingsville, Texas.

Values of Discharge Coefficients of Square-Edged Orifices

Comparison of Results Obtained by Tests Using Gases with Those Obtained by Tests Using Water*

By

HOWARD S. BEAN, *Physicist*

National Bureau of Standards, Washington, D. C.

When, in 1924, the Natural Gas Association of America, now the Natural Gas Department of the American Gas Association, authorized the research project on orifice meters and organized the Gas Measurement Committee to carry on the work the committee was instructed to use natural gas in the experimental part of the work. Accordingly, the experiments performed during the first few years of the study were carried out in locations where natural gas was available.

During the progress of the research being carried out by this committee other experimenters were making studies of a similar nature using water and air as the fluid medium of their experiments. The Natural Gas Committee found it desirable to join forces with the Fluid Meters Committee of the American Society of Mechanical Engineers, which was one of the bodies making similar studies, and this coordination of effort resulted in a material amplification of the field covered by the research. However, it necessitated the reconciliation of the experimental data secured by the use of gas as a medium with those secured when water was used. The method used in tying together the results of these two types of experiments is described fully in Mr. Bean's paper. Consequently this paper constitutes an elaboration of the report of the research project which was submitted by the Gas Measurement Committee at the convention of the Natural Gas Department of the American Gas Association in Memphis on May 6, 1935.

I. Introduction

THE manner in which a fluid moves through an orifice under the influence of a difference of pressure is affected by the kinematic viscosity of the fluid, and the value of the discharge coefficient found from a test of the orifice depends on the value of the Reynolds number at which the test is made.

If the fluid is a gas or vapor, expansion at the orifice also affects the value of the discharge coefficient and the value obtained from a test depends not only on the Reynolds number but also on the ratio of the upstream and downstream pressures. Hence the discharge coefficients found by testing the same orifice with water and with a gas, even at the same Reynolds number in both tests, are not comparable until the value found with the gas has been corrected for the effect of expansion, leaving only that due to viscosity.

It has been noticed that the value of the discharge coefficient obtained by a test with a gas, at a very high Reynolds number, but at a pressure ratio close to unity (this does not necessarily mean a small differential pressure), is about the same as that obtained by a test with water at the same Reynolds number. Also, this approximate equality of discharge coefficient values at high Reynolds numbers has been observed when the pressure ratio with the gas is distinctly less than unity, and a correction for the effects of expansion is applied. The question naturally arises, "does this same equality hold when the Reynolds number is low?" The object of this paper is to show, if possible, that the discharge coefficients determined with gas tests, and corrected for expansion, are equal to those obtained with water tests even at low Reynolds numbers, that is, when the effects of viscosity are appreciable.

II. Test Data Reviewed

The basis of comparison or reference datum which will be used in this review will be the orifice tests, made with water, which Asst. Professor S. R. Beitler conducted at Ohio State University during 1932-1933 for the Joint A. G. A.-A. S. M. E. Committee on Orifice Coefficients, and hereafter referred to as the "Columbus Tests." The tests with gases will be restricted to those in which an independently calibrated device, other than another orifice, was used to determine the rate of flow through the orifice under test. This restricts us to the following groups of tests: (a) The Edgewood Arsenal Tests by the National Bureau of Standards, in which the rate of flow was measured by means of independently calibrated flow nozzles;[1] (b) The Chicago Tests by the A. G. A., in which the rate of flow was determined from the rate of fall of a gas holder;[2] (c) The Cleveland Tests by the Natural Gas Association, in which the rate of flow was measured by the rate of rise of a gas holder; and (d) A few tests by Prof. S. R. Beitler, using steam, in which the steam was condensed and weighed.

Of the Edgewood data it will be sufficient to consider only those which were obtained with 8 orifice plates, 4 each for the 6-inch and 8-inch pipe lines, but all the results for these plates will be utilized. These plates were selected because the results were fairly self-consistent, regardless of absolute value. In the case of the Chicago and Cleveland tests, all the results will be used except those where something in the record of the observations threw doubt on the accuracy of the test. The orifice plates selected from Prof. Beitler's tests are those on which the data are sufficient to satisfactorily determine curves, or lines,

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* Publication approved by the Director of the National Bureau of Standards of the U. S. Department of Commerce.

[1] See National Bureau of Standards Research Paper No. 49.

[2] See National Bureau of Standards Research Paper No. 335.

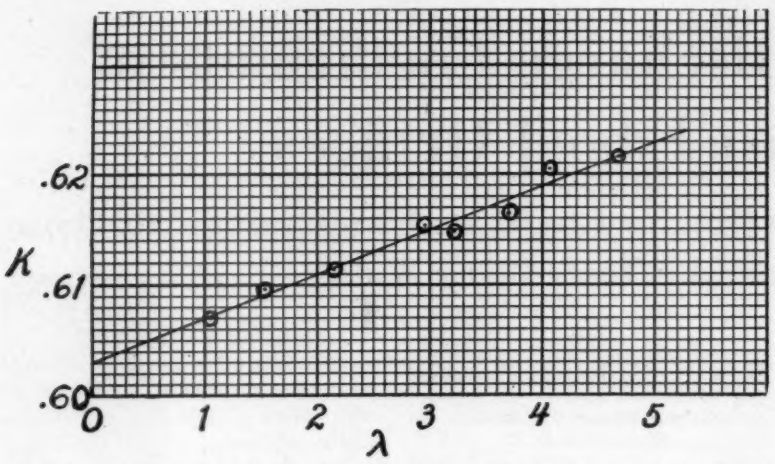


Figure 1. Illustrating the relation between the Discharge Coefficient, K, and the reciprocal of the Reynolds Number, R_d. $\lambda = 10^6/R_d$

and on which tests were also made with water.

III. Basis of Comparison

The discharge coefficient obtained by a test on an orifice using any fluid depends on the value of the Reynolds number at which the test is made, and if the fluid is a gas the discharge coefficient will also be affected by expansion at the orifice. The amount of expansion will depend upon the ratio of the pressures on the two sides of the orifice. Usually in tests with a gas the range of Reynolds numbers covered has been so short that the dependence of the discharge coefficient upon the Reynolds number has been masked by the much more noticeable effects due to expansion. However, it seems entirely reasonable and logical to *assume* that with gases both the Reynolds number (viscosity effect) and expansion operate simultaneously, although independently, upon the value of the discharge coefficient. Assuming that they operate independently is equivalent to assuming that their effects are simply additive, algebraically. Actually the expansion and viscosity effects are probably interdependent to some extent, but if their effects on the test results available are to be considered separately some assumption for doing so is necessary, and the present assumption seems legitimate.

So far as the writer has found, there are available no data from tests so conducted as either to confirm or to disprove this assumption. The nearest that we have to it are the tests by Prof. Beitler in which the same plates were tested with both water and steam. However, here the steam tests covered too short a Reynolds number range to provide any conclusive evidence. Tests which should provide suitable data for answering the question to which this paper is addressed, would be those made with a gas and in such a manner that the pressure ratio is held constant while the Reynolds number is varied, and then the Reynolds number held constant and the pressure ratio is varied.

IV. Method of Making the Comparison

In explaining the method of making the comparison the following symbols will be used:

D_1 (inch) = actual inside diameter of pipe

D_2 (inch) = diameter of the orifice

$\beta = D_2/D_1$ the diameter ratio

g (ft./sec.^{2}) = gravitational acceleration

h_1 (ft.) = differential pressure expressed as a head of the fluid at the density at the section of the upstream pressure tap

p_1 (lb./in.^{2}, abs.) = static pressure at the section of the upstream tap

p_2 (lb./in.^{2}, abs.) = static pressure at the section of the downstream tap

$x = \frac{p_1 - p_2}{p_1}$, the differential pressure ratio

K = the discharge coefficient with the velocity of approach factor included

k = ratio of specific heats

x/k = acoustic ratio

Q_1 (ft.^{3}/sec.) = volume rate of flow in terms of the density at the section of the upstream pressure tap

ρ_1 (lb./ft.^{3}) = density of the fluid at the section of the upstream pressure tap

μ_1 (lb./ft.-sec.) = viscosity of the fluid at the section of the upstream pressure tap

ν_1 (ft.^{2}/sec.) = μ_1/ρ_1, the kinematic viscosity

R_d = the Reynolds number referred to the orifice diameter, and may be computed by $\frac{48\,Q_1}{\pi\,D_2\nu_1}$

$\lambda = 10^6/R_d$

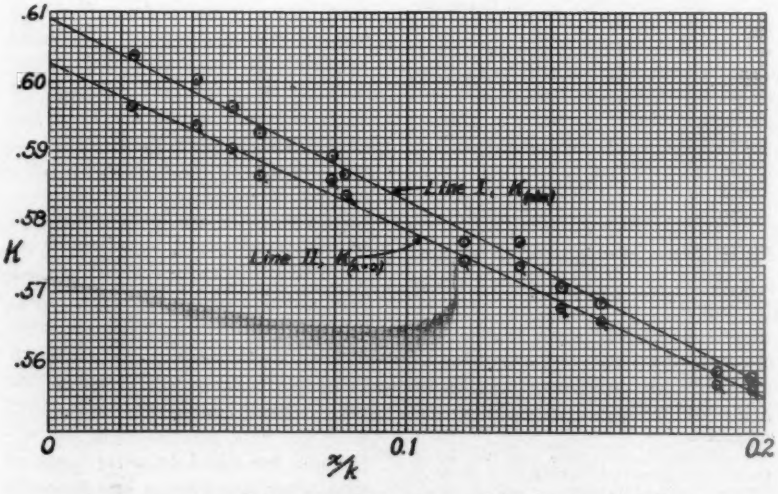


Figure 2. Determination of the "apparent" and "net" expansion effects
⊙ = observed values of K from tests with a gas
⊙ = observed values of K adjusted to λ = 0

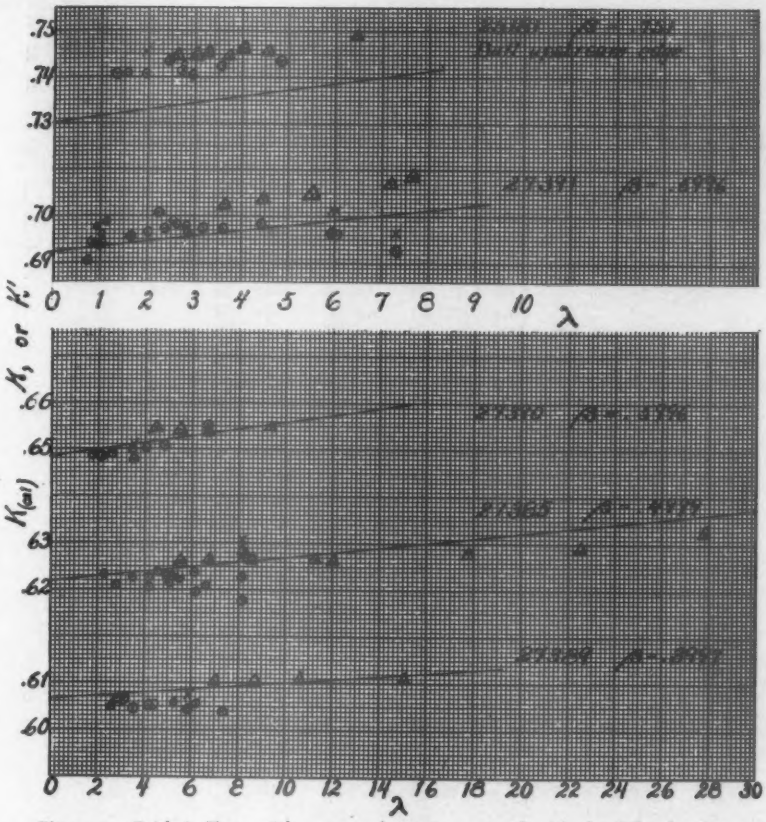


Figure 3. Beitler's Tests with water and steam compared with the Columbus Tests. Vena-contracta taps
△ = value of K from water tests
⊙ = value of K' from steam tests
Lines represent results of the Columbus Tests
∠ = K' from steam tests by use of Witte's expansion factor for low x/k

The discharge coefficient, K, is specifically defined by the hydraulic equation

$$Q_1 = \frac{\pi}{576} D_2^2 K \sqrt{2gh_1} \qquad (1)$$

If the fluid is a liquid the density is constant and the subscripts could be omitted from h and Q. When the fluid is a gas the differential pressure is not measured as a head, and for convenience in computations, equation (1) is put into a different, though equivalent, form involving the specific gravity and the upstream absolute static pressure and temperature. Since equation (1) is given here merely as a definition, and will not be used in the comparison, it is not necessary to discuss these other forms.

In analyzing, for the Joint A. G. A.-A. S. M. E. Committee, the results of the Columbus Tests, which were all made with water, it was found that if the observed values of the coefficients for any one plate were plotted against the reciprocal of the Reynolds number they could be satisfactorily represented by a straight line. Actually, the abscissa used was one million divided by the Reynolds number, this ratio being represented by λ (i.e. $\lambda = 10^6/R_d$). Fig. 1 represents such a plot.[8]

If the line determined by the test points is extended to the left it will intersect the K axis at the point K_o, which is the limiting value which the discharge coefficient K approaches as the Reynolds number, R_d, increases without limit.

Now suppose that a number of tests using a gas are made on this orifice at rather widely different rates of flow, and let it be specified that the static pressure is to be measured at the upstream tap. The values of K, designated $K_{(obs)}$, obtained from these gas tests are to be plotted against their respective values of the acoustic ratio, x/k. In general such a plot will determine a straight line like line I, Fig. 2, and which represents the "apparent" expansion effect.

These values of $K_{(obs)}$ include the effects of viscosity, the magnitude of which may be determined in the following manner: Suppose one of the tests with gas had been made at a Reynolds number of 400,000, so that $\lambda = 2.5$. Now since we have assumed that the viscosity and expansion effects are additive, we may say that had there been no viscosity effect, that is,

TABLE 1

COMPUTATIONS FOR COMPARING DISCHARGE COEFFICIENTS FROM ORIFICE TESTS USING GAS WITH TESTS USING WATER

Edgewood Tests—Flange Taps

Plate 8 6; $D_2 = 2.9964''$; $\beta = 0.518$; $K_o = .6261$.

I	II	III	IV	V	VI	VII	VIII	IX
λ	K_{obs}	λ Correction	$K_{(\lambda=\infty)}$	x/k	Expansion Correction = .245 x/k	K' (x = o)	$K_{(cal)}$	K' — $K_{(cal)}$
1.42	.6362	—.0008	.6354	.001	+.0002	.6364	.6269	+.0095
1.40	.6185	— 08	.6177	.002	05	.6190	69	— 79
1.42	.6165	— 08	.6157	.002	05	.6170	69	— 99
1.48	.6326	— 09	.6317	.006	15	.6341	70	+ 71
8.05	.6342	— 46	.6296	.006	15	.6357	.6307	+ 50
2.39	.6235	— 14	.6221	.007	17	.6252	.6275	— 23
1.20	.6308	— 06	.6302	.009	22	.6330	67	+ 63
1.16	.6248	— 06	.6242	.028	69	.6317	67	+ 50
3.08	.6281	— 18	.6263	.036	88	.6369	79	+ 90
2.10	.6159	— 11	.6148	.078	191	.6350	72	+ 78
1.50	.6068	— 09	.6059	.116	284	.6352	70	+ 82
1.10	.5856	— 06	.5850	.184	451	.6307	67	+ 40
					Averages	arithmetic		±.0068
						algebraic		+.0035

[8] The analysis of the Columbus Tests included the determination of equations or families of curves by which, within certain limits, the coefficient may be found for any size of orifice in any size of pipe line, and for any value of λ (or R_d).

had the Reynolds number been infinitely large and therefore λ infinitely small, the observed value of the coefficient would have been 0.010 less than was actually obtained. This amount is obtained by noting that by the line in Fig. 1, K for $\lambda = 2.5$ is 0.613, and K_o is .603 and .603 — .613 = —0.010. This difference, which we will call the "λ correction," is to be subtracted from $K_{(obs)}$. In a like manner the "λ correction" is determined and subtracted from the $K_{(obs)}$ from each test with gas, thus giving the values, $K_{(\lambda = o)}$, of the discharge coefficient that theoretically would have been obtained had there been no viscosity effect, that is, for $R_d = \infty$. If these values of $K_{(\lambda = o)}$ are plotted against the values of x/k a second line, such as line II in Fig. 2, will be determined, which represents the "net" expansion effect.

The next step is to correct the observed values of K for the "net" expansion effect. To do this the slope of line II is determined, then the x/k value for each test is multiplied by this slope factor, and the product added to the value of $K_{(obs)}$. (This is equivalent to passing a line through each $K_{(obs)}$ point, parallel to line II, and reading the intercept of this line at x/k = 0.) The values of the discharge coefficient, thus corrected for the net expansion effects, but NOT corrected for Reynolds number effect, will be designated K'. It will be evident that these K' values contain any viscosity or Reynolds number effects that were originally present in the $K_{(obs)}$ values when it is remembered that the expansion correction has been applied to the $K_{(obs)}$ values, and NOT to the $K_{(\lambda = o)}$ values. Any K' value is directly comparable with the discharge coefficient value that would be obtained if the orifice were tested with an incompressible but viscous fluid, like water, at the same Reynolds number. Hence, the K's might be called the "liquid coefficients."

It may be mentioned here that the Chicago and Cleveland Tests did not cover a wide enough range of pressure ratios to definitely determine an expansion effect. Hence for these tests the expansion correction was obtained by the use of equation D in National Bureau of Standards Research Paper No. 459.[4]

The final step is to compare these values of K' with the results of water tests as represented by lines similar to that in Fig. 1. Since for most of the orifices considered in this review there were no water tests, the water test values were computed by the empirical equations derived from the analysis of the Columbus Tests, and are designated $K_{(cal)}$.

So far no mention has been made of pressure tap locations, the discussion and method being perfectly general, and applicable to any pair of pressure taps. It is of course obvious that the results for

[4] Notes on the Orifice Meter: The Expansion Factor for Gases, by Edgar Buckingham, National Bureau of Standards, Journal of Research, Vol. 9, July 1932, Paper No. 459.

TABLE 2

Edgewood Tests, Flange Taps
COMPARED WTH COLUMBUS TESTS

I	II	III	IV	V	VI	VII	VIII	IX
Plate	D_2 inch	β	λ	$K_{(cal)}$	K'	$K' - K_{(cal)}$	Average Differences Arithmetic	Algebraic
5-6	1.997	.3453	0.70	.6028	.6078	+.0050		
			.79	28	85	57		
			.87	28	73	45		
			.96	28	24	— 4		
			1.00	29	88	+ 61		
			1.00	29	.5945	— 84		
			1.05	29	.6091	+ 62		
			1.06	29	85	56		
			1.20	29	.6118	89		
			1.21	29	.6076	47		
			1.38	30	84	54		
			1.46	30	76	46		
			1.60	30	99	69		
			1.67	30	12	— 18		
			1.72	30	79	+ 49		
			1.87	31	.6196	165		
			1.90	31	.6043	12		
			1.94	31	71	40		
			2.10	32	55	23		
			2.17	32	.5928	— 104		
			2.26	32	.6040	+ 08		
			2.70	33	78	45		
			3.22	35	81	46		
			3.96	37	23	— 14		
			5.32	41	32	— 09		
			5.78	42	60	+ 18		
			6.65	44	.6180	136	±.0052	+.0035
6-6	2.375	.4110	0.92	.6092	.6099	+.0007		
			1.08	93	.6125	32		
			1.60	94	81	87		
			1.94	97	40	57		
			3.06	99	37	38		
			3.07	99	25	26		
			5.15	.6105	42	37	±.0041	+.0041
11-6	3.500	.605	1.36	.6509	.6549	+.0040		
			1.37	09	49	40		
			1.38	09	28	19		
			1.56	11	64	53		
			1.92	14	46	32		
			4.71	38	93	55		
			6.42	53	.6613	60	±.0043	+.0043
2-8	1.4968	.1961	0.72	.5955	.6017	+.0062		
			.72	55	.5974	19		
			.74	55	.5829	— 126		
			.75	55	.5992	+ 37		
			.78	55	.5859	— 96		
			.91	55	.6014	+ 59		
			1.03	55	.5998	43		
			1.03	55	.6053	98		
			1.06	56	.5986	30		
			1.11	56	94	38		
			1.14	56	91	+ 35		
			1.18	56	.5877	— 79		
			1.28	56	.5982	+ 26		
			1.45	56	94	38		
			1.57	56	.6001	45		
			1.63	57	.5964	7		
			2.03	58	.6038	80		
			2.42	59	53	94		
			2.96	60	.5980	20		
			4.29	63	.6004	41		
			5.07	65	.5995	30		
			14.62	85	.6076	91		
			15.18	86	01	15	±.0054	+.0027
5-8	2.1210	.2778	0.72	.5996	.5917	—.0069		
			.73	96	55	— 41		
			.75	96	68	— 28		
			.89	96	78	— 18		
			.99	97	81	— 16		
			1.01	97	76	— 21		
			1.01	97	.6068	+ 71		

TABLE 2—*continued*

I	II	III	IV	V	VI	VII	VIII	IX
Plate	D_2 inch	β	λ	$K_{(cal)}$	K'	$K' - K_{(cal)}$	Average Differences Arithmetic	Average Differences Algebraic
			1.06	97	62	65		
			1.28	98	.5967	— 31		
			1.29	98	26	— 72		
			1.29	98	.6080	+ 82		
			1.46	98	87	89		
			1.49	98	65	67		
			1.67	99	55	56		
			1.96	.6000	.5972	— 28		
			2.02	00	15	— 85		
			2.14	00	.6077	+ 77		
			2.62	02	.5915	— 87		
			2.98	03	.6037	+ 34		
			3.77	05	74	69	±.0055	+.0006
7-8	3.003	.3936	1.11	.6082	.5955	—.0127		
			1.16	82	77	— 105		
			1.20	82	.6110	+ 28		
			1.41	83	.6039	— 44		
			1.48	83	.6123	+ 40		
			1.69	84	.5991	— 93		
			1.85	85	.6128	+ 43		
			2.16	86	03	+ 17		
			2.46	87	11	+ 24		
			2.74	88	.5947	— 141		
			3.12	90	.6151	+ 61		
			3.96	93	09	+ 16		
			6.09	.6102	.6097	— 05		
			8.10	09	.6150	+ 41	±.0056	—.0018
14-8	4.563	.5980	1.55	.6484	.6622	+.0138		
			2.02	88	38	150		
			2.62	94	29	135		
			2.69	95	42	147		
			3.71	.6507	47	140		
			6.95	40	59	119	±.0138	+.0138

TABLE 3

AVERAGE DIFFERENCES FROM COMPARISONS OF K' AND $K_{(cal)}$ FOR THROAT AND PIPE TAPS

Edgewood Tests

I	II	III	IV	V	VI	VII
			Throat Taps Average Differences $K' - K_{(cal)}$		Pipe Taps Average Differences $K' - K_{(cal)}$	
Plate	D_2 inch	β	arithmetic	algebraic	arithmetic	algebraic
5-6	1.997	.345	±.0040	+.0011	±.0048	—.0027
6-6	2.375	.411	± 29	+ 29	± 34	— 13
8-6	2.996	.518	± 63	— 32	± 84	— 09
11-6	3.500	.605	± 31	+ 31	± 44	— 36
2-8	1.497	.196	± 68	+ 41	± 45	— 19
5-8	2.120	.278	± 50	+ 18	± 57	— 04
7-8	3.003	.394	± 44	— 35	± 53	— 36
14-8	4.563	.598	± 134	+ 134	± 99	+ 99

a given pair of taps are to be compared with the generalized values, from the Columbus tests, for the same tap locations. Thus the results for flange taps will be compared to the flange tap coefficients calculated from the Columbus tests.

V. Results of the Comparison

The results of the comparison are presented in Tables 1 to 5 and Fig. 3.

Table 1 gives all of the computations for each step, as described above, for one of the 8 plates selected from the Edgewood tests. The last column, IX, gives the differences between the gas and water tests. The arithmetic average affords an estimate of the quality of the tests while the algebraic average gives an estimate of the agreement between the two groups of tests.

Table 2 gives the values of λ, K', $K_{(cal)}$ and $K' - K_{(cal)}$ for the remaining 7 plates from the Edgewood tests, for flange taps.

Table 3 gives the average arithmetic and algebraic values of $K' - K_{(cal)}$ for the 8 plates from the Edgewood tests, for throat and pipe taps.

Tables 4 and 5 give the values of λ, K', $K_{(cal)}$ and $K' - K_{(cal)}$ for the Chicago and Cleveland tests, respectively.

The comparisons for Prof. Beitler's tests are presented in Fig. 3 as this affords a very interesting comparison between the results obtained from tests of the same orifices in the same setting using both water and steam. The results of the steam tests, indicated by circles, have been corrected for the "net" expansion effect as described above, and therefore represent values of K'. The results of the tests with water, to which no corrections were applied, are indicated by triangles. The positions and slopes of the straight lines were determined from the analysis of the Columbus tests, and therefore represent $K_{(cal)}$.

VI. Discussion of the Results

As a whole, the results of the Edgewood tests appear to have been on the average from 0.4% to 0.5% higher than those obtained from the Columbus tests. This is probably due to the relative sharpness of the upstream edges of the orifices used in the two groups of tests; those used at Edgewood were not quite as sharp as those used in the Columbus tests. This is certainly the case with plate 14-8, which was one of several known to have a slightly dull upstream edge. There appears to have been no systematic relation between values of $K' - K_{(cal)}$ and the Reynolds number or λ. As the ranges of Reynolds numbers covered by the two groups of tests were about the same, this indicates that the magnitude of the viscosity effects obtained by the two groups of tests are substantially the same. That is, if these K' values were plotted against λ, they would determine lines having substantially the same slopes as lines representing $K_{(cal)}$, the term "viscosity effect" being used to mean the "slope of the $K' = f_1(\lambda)$ line, (or the $K_{(cal)} = f_2(\lambda)$ line)."

Of the four orifice plates on which tests were made against the holder in the Chicago tests, the results with the two smaller sizes are of very little value. The scattering of the points with the 5% area plate was probably due to the size of the holder being too large for the capacity of the orifice at the rates of flow obtainable, while with the 10% plate there were only two tests. The agreement between the results for the Chicago 20% and 30% plates and the generalized results of the Columbus tests is very satisfactory. While the Reynolds number range of the Chicago tests is rather limited, the viscosity effects appear to be comparable in the two groups of tests.

The results from the Cleveland tests are from 0.5% to 1.2% higher than the generalized results of the Columbus Tests. To attempt an explanation of the cause of this would be out of place in this paper. The range of Reynolds numbers

TABLE 4

COMPARISON OF CHICAGO HOLDER TESTS WITH COLUMBUS TESTS

I	II	III	IV	V	VI	VII	VIII	IX
Plate	D_2 inch	β	λ	$K_{(cal)}$	K'	$K' - K_{(cal)}$	Average Differences	
							Arithmetic	Algebraic
5%	5.213	.2236	2.31	.5978	.6006	+.0028		
			2.73	82	80	+ 98		
			3.14	84	62	78		
			3.55	87	40	53		
			4.92	97	.5920	— 77		
			5.56	.6002	.5846	— 156	±.0082	+.0004
10%	7.374	.3163	2.52	.6024	.6006	—.0018		
			5.33	39	.5992	— 47	±.0033	+.0033
20%	10.429	.4474	0.96	.6149	.6159	+.0010		
			.99	49	62	+ 13		
			1.00	49	34	— 15		
			1.04	50	30	— 20		
			1.23	51	98	+ 47		
			1.23	51	52	+ 1		
			1.26	51	58	+ 7		
			1.27	51	46	— 5		
			1.83	56	86	+ 30		
			1.88	57	38	— 19		
			2.13	60	67	+ 7		
			2.20	60	48	— 12		
			2.26	61	03	— 58	±.0019	—.0001
			(4.87)	80	(.6342)			
30%	12.776	.5481	0.78	.6352	.6363	+.0011		
			.94	55	(.6267)	(— 88)		
			.98	56	.6366	+ 10		
			.98	56	.6324	— 32		
			1.02	57	.6348	— 9		
			1.03	57	.6352	— 5		
			1.14	59	.6360	+ 1		
			1.55	66	.6346	— 20	±.0012	—.0006

covered by the Cleveland tests was too small for any difference in the viscosity effects in the two groups of tests to be noticeable, even if present.

With Beitler's tests (that is, his group of tests in which the same orifices were tested with both steam and water), the average of the water and steam tests agrees fairly well with the lines representing the results of the Columbus Tests, with the exception of plate No. 25181, which as noted, was dull edged. It may be that the dull edge accounts for there being better agreement between the water and steam tests than with any of the others. With the other plates, the water tests on all but No. 27391 agree very well with the lines representing the Columbus Tests, while the steam tests are distinctly lower. With plate No. 27391 it is the steam tests that agree with the Columbus Tests while the water tests are higher.

For each of the 5 plates selected from Beitler's tests there is one or more of the K' points (circles) distinctly lower than the run of the rest. In seeking an explanation for this it was found that the differential pressure ratios for these tests ranged between 0.009 and 0.09,—for the most part being around 0.04. It was then recalled that in his 1931 paper, Dr. Witte[5] reported an anomaly in connection with his steam tests, in that for values of x less than about 0.05 or 0.06 the slopes of the $K_{(obs)} = f(x/k)$ lines (i.e., the expansion effects) were about twice those obtained for higher values of x. Applying these higher expansion factors as given by Witte, to Beitler's low values brought them up more in line with the other tests. A few of these higher values of K' are indicated by crosses (x) in Fig. 3.

It is obvious that Figs. 1 and 2 do not represent the results of actual tests, but have been prepared merely for the purposes of illustration. This is particularly so with Fig. 2 where the difference between lines I and II has been greatly exaggerated over that actually found. The maximum "λ correction" for any single test of the 550 covered by this review was slightly less than 1.5%. The minimum "λ correction" was practically 0, and the average would hardly exceed 0.25%.

As indicated in Section IV, the purpose of applying the "λ correction" was to determine the "net" expansion effect, as represented by line II, Fig. 2. Since the difference in the slopes of lines I and II was usually small the question naturally arises as to whether the final comparisons between $K_{(cal)}$ and K' would have been materially different if we had used the "apparent" expansion, as represented by line I, instead of the "net" expansion. To answer this, from the tests on each of the 8 Edgewood plates and Beitler's 5 plates, the test made at the highest acoustic ratio was selected, and the value of K' computed first by using the slope for the "net" expansion, and then by using that for the "apparent" expansion. The average difference between these two values of K' for these 13 orifices (actually equivalent to 29 orifices because with the Edgewood orifices separate tests were made with 3 pairs of taps) was less than 0.1%. Since this difference was for those tests made at the highest acoustic ratios, the average for all of the tests would not be over one third this amount (i.e. 0.03%) as there were many more tests at low acoustic ratios than at high. Therefore, as far as these particular data are concerned, the determination and use of the "net" expansion effect could have been omitted without any appreciable effect on the result of the final comparison. This, however, was not apparent at the start, and there is no assurance it would be so in all cases, particularly if the orifices were small and the rates of gas or steam flow very low.

The final comparisons are between the values of K' and $K_{(cal)}$ in Tables 1 to 5, and between the circles of Fig. 3 and the triangles and lines. From these we may draw the following conclusions:

1. When corrected for expansion effects, the discharge coefficient of an orifice determined by a test with gas, at a particular Reynolds number, is the same in absolute value as would be obtained from a test with water at the same Reynolds number, and in the same installation.

2. The discharge coefficients of an orifice determined by tests with a gas are subject to the effects of kinematic viscosity (i.e., Reynolds number effects) to the same extent, in both magnitude and direction, as the coefficients determined by tests with water. (This second statement is really a corollary of 1.)

From these we have the practical corollary that:

Orifice coefficients may be determined by tests with water, and the coefficient value, to be used in the measurement of a gas, derived by applying to the "water" coefficient an *expansion factor* obtained from suitable tests with gas.

In its recent work the Joint A. G. A. A. S. M. E. Committee on Orifice Coefficients, has applied this corollary. It has determined its basic discharge coefficient values from the Columbus tests with water. For use in the measurements

[5] Die Strömung durch Düsen und Blenden, von Dr. A. Witte, Forschung auf dem Gebiete des Ingenieurwesens 2 (1931), 291.

TABLE 5

COMPARISON OF CLEVELAND HOLDER TESTS WITH COLUMBUS TESTS

I	II	III	IV	V	VI	VII	VIII	IX
Plate	D_2 inch	β	λ	$K_{(cal)}$	K'	K' — $K_{(cal)}$	Average Differences	
							Arithmetic	Algebraic
8 x 4	4.0157	.5005	1.02	.6233	.6320	+.0087		
			1.04	33	.6299	66		
			1.05	33	.6320	87		
			1.05	33	.6287	54		
			1.14	33	92	59		
			1.25	34	94	60		
			1.26	34	87	53		
			1.28	34	66	32		
			1.29	34	.6325	91		
			1.31	34	20	86		
			1.32	34	(13)	77		
			1.32	34	23	89		
			1.70	37	.6295	58		
			1.71	37	91	54		
			1.73	37	.6317	80		
			1.76	37	08	71		
			1.85	38	(.6181)	(—.0057)		
			1.87	38	.6301	+ 63	±.0068	+.0068
10 x 4	4.0177	.4012	1.02	.6085	.6141	+.0056		
			1.04	85	42	57		
			1.05	85	.6203	118		
			1.05	85	.6146	61		
			1.14	85	22	37		
			1.25	86	.6095	9		
			1.26	86	.6113	27		
			1.28	86	.6088	2		
			1.29	86	.6158	72		
			1.31	86	13	27		
			1.32	86	63	77		
			1.32	86	31	45		
			1.70	88	20	32		
			1.71	88	34	46		
			1.73	88	59	71		
			1.76	88	08	20		
			1.85	89	(.6032)	(— 57)		
			1.87	89	.6137	+ 48	±.0047	+.0047
16 x 4	4.024	.2623	1.02	.6000	.6027	+.0027		
			1.04	00	16	16		
			1.05	00	61	61		
			1.05	00	49	49		
			1.14	00	12	12		
			1.25	01	.5988	— 13		
			1.26	01	.6005	+ 4		
			1.28	01	.5987	— 14		
			1.29	01	.6052	+ 51		
			1.31	02	.5991	— 11		
			1.32	02	.6066	+ 64		
			1.32	02	.6110	8		
			1.70	04	.6027	23		
			1.71	04	37	33		
			1.73	04	85	81		
			1.76	04	16	12		
			1.85	05	.5946	(— 59)		
			1.87	05	.6070	+ 65	±.0033	+.0028

of gas it uses expansion factors obtained from the Los Angeles, Edgewood Arsenal and other similar groups of tests.

The author expresses his appreciation to Dr. Edgar Buckingham for his suggestions in the presentation of this comparison, and to Asst. Prof. S. R. Beitler for the use of his data.

There is a distinction of utility service that is often overlooked. Unlike other industries, our utilities must accept all business that is offered; they cannot choose their customers; they cannot place any limit upon the demand for their product but must supply that demand without notice. Having started, they cannot stop. They cannot close down for repairs or for any other cause. The fires, once lighted, must never go out. The slogan—"Ready to Serve"— must be kept forever true in its literal sense. They must not only be prepared to meet today's needs but must provide a reserve against tomorrow's. They must cultivate the good will of their public, first by deserving it through good service, and then by advertising the fact.—GEORGE B. CORTELYOU, 1926.

Noted Utility Lawyer Is Dead

C. D. Jackson

CARL DEWITT JACKSON, widely known public utility lawyer and former counsel for the national public utility associations, died suddenly in Rio de Janeiro on June 12, according to cable advices received by the American Gas Association from Mrs. Jackson. At the time of his death Mr. Jackson was special counsel for the Brazilian Traction Light and Power Co. Ltd., and had served in that capacity since February 1, 1934, when he retired as counsel for the American Gas Association.

Born in Evanston, Ill., September 13, 1870, Mr. Jackson was graduated from Harvard University in 1894 and took up the practice of law June 1, 1895, at Oshkosh, Wis. He was appointed a member of the Wisconsin Railroad Commission in 1915 and served as chairman of the Commission from 1917 to 1922. Because of his knowledge of public utility regulatory practices, Mr. Jackson was elected president of the National Association of Railroad and Utilities Commissioners in 1921, and served a one-year term.

Early in 1923, Mr. Jackson was retained as consulting counsel by the American Gas Association and National Electric Light Association and served in that capacity for several years, later becoming counsel for the Joint Committee of National Utility Associations in connection with the Federal Trade Commission investigation of the utility industry. Subsequently, Mr. Jackson served four years as counsel for the American Gas Association.

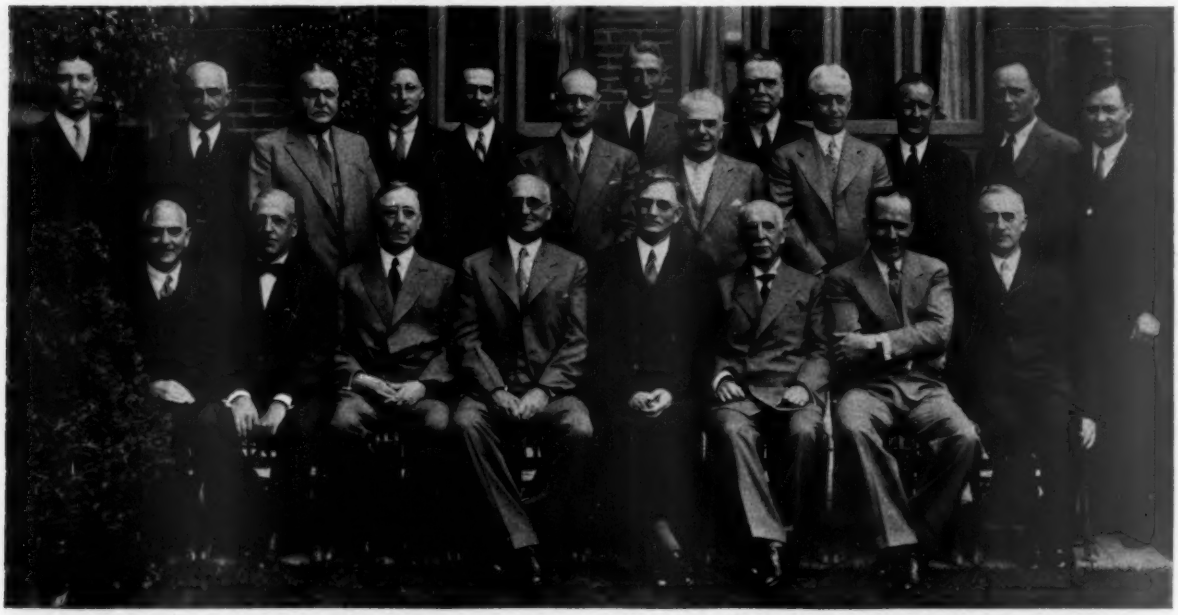
Surviving are his wife, three daughters, Mrs. John Q. Tilson, Jr., of New Haven, Conn.; Elizabeth Jane of the Netherwood School, New Brunswick, Canada; Carol, of New York; and one son, Andrew, of Wesleyan University at Middletown, Conn.

Funeral services were held at Rio de Janeiro on June 13 and interment will be at Oshkosh, Wis.

G. H. Cressler Dies

THE Stacey Manufacturing Company, Cincinnati, Ohio, has announced the death of George H. Cressler, vice-president in charge of sales. Mr. Cressler was 55 years old. He had been affiliated with the Stacey company since 1920 when he became general sales manager. He was made vice-president in charge of sales upon reorganization of the company late last year. He was a member of the American Gas Association.

Association's Executive Board Meets at Atlantic City



Meeting of the Executive Board in Atlantic City, May 31. Standing, left to right: F. M. Rosenkrans, Herman Russell, Conrad N. Lauer, Randall J. LeBoeuf, Jr., A. S. Corson, Henry Obermeyer, T. R. Weymouth, J. F. Quinn, B. J. Mullaney, J. B. Tonkin, K. R. Boyes, W. C. Beckjord, C. A. Harrison. Seated, left to right: J. S. DeHart, Jr., O. H. Fogg, Vice-President L. B. Denning, President P. S. Young, H. O. Caster, Arthur Hewitt, J. F. Rooney, Alexander Forward

Christy Payne, Natural Gas Leader, Retires

THE retirement of Christy Payne, vice-president, treasurer and director of the Standard Oil Company of New Jersey, was announced June 5 at the annual meeting of that organization.

Christy Payne

Mr. Payne, who has spent his entire business life of forty years in the service of Standard Oil, retires under the company's annuity plan in furtherance of a desire made known to his fellow directors some months ago, the announcement stated.

H. L. Pratt Retires

Mr. Payne's retirement follows by a few days the withdrawal of another Standard Oil veteran, Herbert L. Pratt, as chairman and director of Socony-Vacuum Oil Company.

Mr. Payne is widely known throughout the industry for his leadership in the development of natural gas. Among the enterprises which he helped to pioneer were the 1,100-mile pipe line from the Panhandle gas fields in Texas to Chicago in 1931; the Louisiana to St. Louis line in 1929, and other long distance pipe lines supplying natural gas to Denver, Col., Baton Rouge, La., and other important cities. He was an active member of the Natural Gas Department of the American Gas Association.

The retiring executive was born into the oil business. His father was the late Calvin W. Payne, formerly president of the natural gas group of the Standard Oil Company of New Jersey, and vice-president and general manager of its oil pipe line subsidiary companies. Christy Payne was graduated from Princeton in 1895 and entered the employ of the National Transit Company, a New Jersey Standard unit. He studied law at night under the coaching of M. F. Elliott, then general counsel of the company, and was admitted to the bar in 1898.

His subsequent career centered in the legal department of the natural gas group in western Pennsylvania until 1920 when he moved from Pittsburgh to the New York office and became president of the People's Natural Gas Company and allied units. In June, 1927, he was made a director of Standard of New Jersey and in April, 1933, became treasurer on retirement of S. B. Hunt. Two months later he was elected a vice-president and member of the executive committee of the company.

Lone Star Company Makes Appointments

D. A. Hulcy

E. F. Schmidt

L. B. DENNING, president of the Lone Star Gas Corporation, recently announced the appointment of D. A. Hulcy of Dallas, Texas, as vice-president and member of the board of directors of the corporation. At the same time announcement was made of the election of Elmer F. Schmidt, general superintendent of the Lone Star Company, to the board of directors. Roy C. Coffee, company attorney, was promoted to general attorney and

elected to the board, and Marshall Newcomb, company attorney, was named assistant general attorney.

Mr. Hulcy has been assistant to Mr. Denning since 1929. The recent death of Karl F. Griffith, vice-president and general counsel, left a vacancy on the board. Mr. Hulcy joined the Lone Star organization in 1920 and advanced through various accounting and auditing positions to his present title. He is also secretary and comptroller of the Northern Natural Gas Company which operates a gas pipe line from the Texas Panhandle to Minneapolis and intervening cities.

Mr. Schmidt came to the Lone Star Gas Company in 1918 from the Ohio Fuel Supply Company where he had engaged in research and experimental work with measurement instruments and assisted in developing the gas density and mercury recording gauge on orifice meters which are widely used today. He was promoted to general superintendent in 1922. He is a member of the American Gas Association, the American Society of Mechanical Engineers and the Cornell Engineering Club.

Michigan Offers New Courses on Fuels

ANNOUNCEMENT has been made of new courses in chemical and metallurgical engineering given by the Department of Chemical and Metallurgical Engineering, University of Michigan, Ann Arbor, Michigan. The university offers many opportunities for special study and has unusual facilities available in courses of primary interest to the gas industry.

Among the courses listed which are related to the gas industry are such subjects as: engineering materials, fuels and furnaces, unit operations, the utilization of fuels, heat and material balances, and gas. This latter course covers research relating to the manufacture, properties, and uses of coal gas, water gas, oil gas, and producer gas.

The number of undergraduates in the Department of Chemical and Metallurgical Engineering is over 300 and the number of graduate students is over 60. Since the depression commenced, 46 men have received doctorates in chemical and metallurgical engineering, every one of these men now being employed in professional work.

Copies of the bulletin listing the courses available may be obtained from the Department of Chemical and Metallurgical Engineering.

Convention Calendar

JULY

11-12 Pacific Coast Gas Association
Northwest Conference, Tacoma, Wash.

SEPTEMBER

17-19 Pacific Coast Gas Association
Hotel Huntington, Pasadena, Calif.

23-25 American Transit Association
Ambassador Hotel, Atlantic City, N. J.

Sept. 28-Oct. 1 The British Commercial Gas Association—24th Annual General Meeting and Conference
Edinburgh, Scotland

OCTOBER

14-18 American Gas Association
Chicago, Ill.

14-18 National Association of Railroad and Utilities Commissioners
Nashville, Tenn.

14-18 Twenty-Fourth Annual Safety Congress
Louisville, Ky.

NOVEMBER

11-14 American Petroleum Institute
Biltmore Hotel, Los Angeles, Calif.

Canadian Gas Association

UNDER the leadership of J. C. Dawson, of Quebec City, the 28th annual convention of the Canadian Gas Association was brought to a successful conclusion June 11. At the opening session, June 10, President Dawson predicted an early return of prosperity to the Canadian gas industry and reported a larger association membership than in any previous year of the Association's history.

The business sessions emphasized the technical problems of the industry and a number of practical papers were presented and thoroughly discussed from the floor. All sessions were well attended. The American Gas Association was represented at the convention by P. S. Young, president; Alexander Forward, managing director, and R. M. Conner, director of the Testing Laboratory, each of whom addressed the meeting briefly.

Officers elected for the coming year are: President, John Keillor, Vancouver, B. C.; first vice-president, W. H. Munro, Ottawa; second vice-president, Edward J. Tucker, Toronto; and secretary-treasurer, George W. Allen, Toronto. The following were chosen as members of the Executive Committee: Arthur Hewitt, Toronto; J. M. H. Young, London, Ontario; J. C. Dawson, Quebec City; D. G. Munroe, Montreal; J. J. Humphreys, Montreal; V. S. McIntyre, Kitchener; Hugh McNair, Winnipeg; K. L. Dawson, Halifax; T. P. Pinckard, Hamilton; and H. T. Fairweather, St. Johns, N. B.

Drives around the city and a special trip to the famous Catholic Shrine of Sainte Anne de Beaupre, and the Falls of Montmorency, proved of great interest to the delegates. The new gas plant of the Quebec Power Company was visited and the attractive layout of the grounds received much favorable comment.

It was decided to hold the 1936 convention in Vancouver, B. C., in conjunction with the meeting of the Pacific Coast Gas Association. At that time Vancouver will be commemorating its 50th anniversary as a city, and the Vancouver Gas Company will also be celebrating its 50th birthday.

Students Praise Natural Gas Course

DESPITE the fact that it is only a short time since the first student completed the home study course on Natural Gas offered by the University of Kansas in cooperation with the American Gas Association, many students have already attested to its great practical value and thought stimulating qualities. Letters from various groups of students have raised many pertinent questions and, in some instances, suggested the need for fundamental research in the industry.

In a letter to Professor C. M. Young, dated May 11, 1935, William W. Mayfield, of Clarksburg, West Virginia, the first student to complete the course, writes: "I feel that the knowledge obtained from the course is invaluable to me. It has broadened my views of the natural gas business and has shown me that the natural gas industry is not only a great industry but an extremely interesting one as well."

Another letter to Professor Young from Colin M. Carter, of the Hutchinson Gas Company, leader of a group of students in Hutchinson, Kansas, is typical. Mr. Carter writes: "It gives me great pleasure to acknowledge receipt of your letter in reply to our questions to Mr. Ingham on some of the phenomena in the sand and reservoirs. Please permit me to thank you very heartily for your interest as well as for the high compliments you pay us. This has been no little encouragement to all of our boys here in sustaining interest in the course. I think the course is of immense practical value as well as one that is presented so that the information is easily digested."

Departments Combined

J. P. PULLIAM, president, Wisconsin Public Service Corporation, recently announced the consolidation of the advertising, publicity and educational departments effective May 1, 1935. The new department is known as the Department of Research and will be located at Green Bay, Wisconsin.

O. C. Roehl, Dale Remington and F. J. Hatch have charge of the various activities of the department which operates under the direction of C. R. Phenicie, vice-president, Green Bay, and C. B. Boulet, Milwaukee.

ACCOUNTING SECTION

A. S. CORSON, Chairman — H. W. HARTMAN, Secretary — F. L. GRIFFITH, Vice-Chairman

Standardization of Office Furniture

By PHILIP J. SWEENIE
The Peoples Gas Light and Coke Company, Chicago, Ill.

IN 1933, there was presented to the Accounting Section of the American Gas Association a detailed report on the advantages of standardizing forms and printing. Less apparent perhaps but nevertheless of sufficient merit to warrant consideration are the advantages and economies to be had in the standardization of office furniture.

A general definition of standardization as applied to office furniture might be similarity in size, finish and design, with only such variations as are absolutely essential to a particular need or particular job. Standardization implies and requires the concentration of the functions of selecting, purchasing and maintaining furniture in one executive.

This centralization of responsibility for office furniture and equipment in one executive has in itself many advantages. Among them might be cited the following:

1. The executive becomes an authority on values and requirements and consequently is not likely to be misled or oversold by zealous salesmen.

2. The executive is able to acquire a fund of information with respect to the durability of, and cost of maintaining, present furniture and equipment, which information is useful in future dealings.

3. The executive is able to reduce expenditures for new furniture and equipment by virtue of his authority to take over items no longer used by one department to meet the requirements of another department or to provide a surplus stock.

Effect of Uniformity

The above advantages are not mere theory, but over a period of time will result in definite savings in maintenance expenditures and curtailment of unnecessary expenditures.

The psychological effect of uniformity in office furniture upon the personnel is an advantage accruing from standardization. It is now a generally recognized fact that office efficiency is to some extent related to office surroundings. The well-ordered appearance of a place of business commands the respect of all, employees and visitors alike; it creates an atmosphere of well-organized activities and encourages the effort to maintain such an atmosphere. On the other hand an office cluttered with a miscellaneous assortment of furniture, selected to appease individual and often clashing tastes, we believe, conducive to confusion. The financial benefit of the psychological effect of standardization and uniformity in office furniture cannot, of course, be accurately determined but it is a factor not to be overlooked by the wide-awake organization.

Standardization permits consolidation of departments and the transfer of personnel and their furniture from one department to another, without the loss of any of the benefits mentioned above. Such consolidations and transfers are a common problem, but from the furniture standpoint they cease to be a problem with standardized equipment. Experience has demonstrated that when an activity is discontinued for which nonstandardized equipment has been used it is difficult to place the furniture and equipment so released in use in other branches of a company's organization;

Lively Discussions Expected At Luncheon Conferences

THERE is every indication that the Accounting Section Luncheon Conferences will be a howling, riproaring success.

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Bring your pet problem along with you! These are YOUR Conferences and are designed to help YOU!

Then, after indulging in a fine meal, amid a friendly atmosphere, sit back comfortably in your chair, smoke if you so desire, listen to or participate in discussions of vital interest to each and every one employed in the gas business. Prominent members of the Accounting Section will preside at each of these meetings, and they and your fellow "gasers" will be only too glad to impart their knowledge and experience. Any problems or questions you may have and wish to be enlightened upon, can and will be discussed freely by competent gas men. Remember, you must attend to benefit. No minutes of these conferences will be taken.

Here is a little information which will whet your appetite. It's merely an indication of how useful these Conferences will be to *you!*

If YOU are interested in General Accounting —listen!

Some of the questions to be discussed at the General Accounting Conference are:

What should be done in connection with Stores Expense when material is returned to the Store Room?

Use of copy of purchase order as a material receipt.

What methods are used, if any, to assist outside auditors in order that such outside auditing costs be kept at a minimum?

Cash discounts taken in payment of invoices.

Internal audits of departments.

Fixed capital records.

Contributions for extensions.

Budget estimates.

Gas or loss in gas holders.

Your ideas for topics to be discussed will be welcome. Send them to A.G.A. Headquarters.

And this is only part of the line-up for the General Accounting Group!

Briefly—these accounting luncheon conferences are designed to help you and your company!

whereas, if the furniture and equipment so released is similar to that in general use, no difficulty is encountered in supplying it as it may be required to meet increasing needs in those departments whose work is continuing.

Another advantage of standardization is the simplicity of property record accounting through the reduction in the number of different items in use and ability to group the many similar items for pricing purposes.

By the simple expedient of setting up a standard group of furniture items for the officers of the company, another group for its department heads, and a third group for general use, one large company has been able to avoid the irritating problem which is bound to arise when executives or department heads are permitted to select and purchase equipment for their own offices and whose aim in each instance might be to obtain equipment just a little better or more attractive than that of another executive or department head.

It will be well to list here, some items which adapt themselves most effectively to a standardization program:

Desks:
Sixty-inch sizes for general use; allows sufficient knee space and ample desk top space. Number of drawers in each pedestal depends upon type of work.

Tables:
Various sizes, limited as much as possible, since tables are usually auxiliary items. Can also be used for clerks where drawer space is not important.

Chairs:
Revolving armchairs for executive and semiexecutive use, revolving chairs without arms for clerks. Visitors and conference chairs should all be alike, with or without arms or both, for interchangeability.

Filing equipment:
Standardization important for purposes of arrangement in batteries.

Carpeting and linoleum:
Uniform quality and color enables offices to be enlarged or rearranged and used carpet or linoleum relaid. Incidentally, when carpet becomes worn in spots and new carpet is required, used material can be cut up and used as chair mats under swivel chairs, thus prolonging the life of floor covering.

Casters:
Should be ball bearing with hard rubber or composition wheels for carpeting or soft flooring, and with softer rubber wheels for linoleum, rubber tile, asphalt tile, cork, etc.

Mechanical equipment accessories:
For comfort, ease of operation and efficiency, standard desks, tables, stands and chairs are recommended.

In addition, it has been found advantageous in the case of at least one large company to standardize on:

the use of chair and desk bumpers to eliminate splintering on wood desks and chairs,

the limited use of glass tops to eliminate reflections and glare which may cause eye strain,

wood or steel letter trays and steel wastebaskets with rubber corners to reduce damage to equipment and walls,

the limited use of inkwells, to reduce maintenance on furniture and floor covering,

the limited use or entire removal of standing desks and high stools,

placing of all high objects along walls, to increase visibility throughout an entire department or room.

In connection with a standardization plan and a property record it is of great advantage to have a rigid rule that no item of equipment shall be moved without a proper transfer form being made out and approved by those concerned.

Although time is required to maintain and enforce a standardization program, the results obtained will enable one to have full control of equipment and purchases and will produce many benefits not apparent in the beginning.

This article makes no attempt to specify the type or kind of equipment best suited for a particular job or department. It is merely a recommendation for standardization of equipment, which the experience of many large organizations has already proved to be valuable.

H. M. Brundage Honored at Luncheon

Testimonial luncheon given by friends and associates of H. M. Brundage, retired vice-president of the Consolidated Gas Company of New York, at the Ritz Carlton Hotel, Atlantic City, N. J., June 1. Mr. Brundage was one of the founders and for many years a leading figure of the Accounting Section of the American Gas Association. A. S. Corson, chairman of the Accounting Section, presided at the luncheon and introduced President Young, Managing Director Forward and Edward Porter, vice-president of the Philadelphia Electric Company, who paid tribute to the guest of honor.

In the photograph are, left to right: L. A. Mayo, Morris Tracy, H. L. Dalbeck, G. B. Webber, T. S. Lever, H. T. East, F. L. Blackburn, J. I. Blanchfield, H. C. Davidson, H. L. Gruehn, H. A. Ehrmann, F. J. Bischoff, W. F. R. Munnich, K. R. Boyes, E. J. Tucker, H. W. Hartman, Edward Porter, H. M. Brundage, A. S. Corson, P. S. Young, and Alexander Forward. F. L. Griffith who was also present is not in the picture.

Mechanical Pencils for Business Use

By HERBERT E. CLIFF

Public Service Electric and Gas Company,
Newark, N. J.

H. E. Cliff

THE widespread use of mechanical pencils in business is based upon the simple fact that for most purposes mechanical pencils are more economical and more efficient than wooden pencils. The purpose of this article is to relate some of the advantages of mechanical pencils as well as some of the disadvantages, and to point out certain features that should be taken into consideration when selecting mechanical pencils for business use.

Advantages

Mechanical pencils are more economical than wooden pencils for four reasons: First, the mechanical pencil remains intact instead of being consumed in the process of sharpening; second, replacement leads for mechanical pencils are less expensive than new wooden pencils; third, erasers on mechanical pencils are used completely, whereas erasers on wooden pencils in many cases are thrown away when the wooden pencil no longer is usable; and fourth, pencil sharpeners are eliminated. It is generally conceded that one third of each wooden pencil is used in writing, one third is sharpened away, and one third is thrown away.

Mechanical pencils are correctly balanced for ease of writing. The length is always the same. With a wooden pencil the length varies from about seven inches when it is new, to three or four inches before it is discarded.

Mechanical pencils are always sharp. While the point is not as sharp as that of a sharpened wooden pencil, the thin leads that are used with mechanical pencils provide a point that is sharp enough for most purposes.

The use of mechanical pencils saves the time and inconvenience of sharpening wooden pencils. The saving in time of sharpening is of little consequence, but the convenience of having a sharpened pencil at all times is important, especially in departments where pencil sharpeners are not always available.

As against these advantages, certain disadvantages of mechanical pencils are frequently voiced. These disadvantages can be summarized as follows:

1. It is difficult to exercise strict control over the issuance of mechanical pencils, and unless strict control is maintained, mechanical pencils will be more expensive than wooden pencils.

   The experience of both large and small companies which use mechanical pencils indicates that an adequate but simple control can be set up. While this control involves some extra effort, the savings are well worth it.
2. Leads break while writing.

   Generally if the lead breaks it is because it is extended too far from the tip of the pencil. Experience in the use of the pencil, backed by careful instruction, will overcome this objection.
3. Leads run out too frequently.

   This can be avoided by giving occasional attention to the supply of lead in the pencil.
4. Mechanical pencils are not suited to certain kinds of work.

   It certainly is true that for some purposes wooden pencils are better than mechanical pencils. This is especially so in drafting departments and in certain accounting departments where a very fine point is required, and in departments where colored leads are used extensively.
5. In some cases there is a prejudice against mechanical pencils.

   A personal prejudice against mechanical pencils generally is due either to habitual use of wooden pencils and a consequent reluctance to change, or to experiences with types of mechanical pencils that were not intended for business use. A fair trial of a good mechanical pencil designed for business purposes, as against what might be termed a novelty pencil, usually will overcome these personal prejudices.

Whether or not the advantages or disadvantages predominate depends largely upon the type of mechanical pencil and supplies selected and upon the method used to control the issues.

The Mechanical Pencil

There are many makes of mechanical pencils on the market, and there is a wide variation both in the construction of the pencils and in the price range.

There are two fundamental differences in the construction of mechanical pencils. One type is known as the propel-repel, and the other type is known as the straight propel. The propel-repel type permits the user to control the movement of the lead both ways automatically—to eject it from the pencil and to withdraw it back into the pencil. In this type the lead is held firm in a little cup at the inner end of the pencil. The straight propel type permits the user to move the lead automatically only in a forward direction, but the lead can be pushed back into the pencil. In the straight propel type, the lead is gripped at the tip of the pencil. Both types have definite advantages.

When selecting mechanical pencils care should be given to several features. The mechanical pencil should as nearly as possible approximate a wooden pencil in diameter, shape and weight, so that the transfer from wooden pencils can be made as easily as possible. The construction of the pencil should be such as to provide accessibility to moving parts, so that minor repairs readily can be made, and so that the natural inquisitiveness of most users can be satisfied. It is preferable to select a pencil so constructed that it is possible at any time to determine the length of lead in the pencil. All exterior parts of the pencil should be of material that not only will wear well but that also will not discolor with handling.

It is desirable to have some company identification imprinted in the pencil as a deterrent to misappropriation. Merely printing the name of the company is not always effective, for this sometimes adds to the value of the pencil as a memento or as an advertising medium. Some companies have adopted the plan of imprinting "Property of" immediately before the name of the company. This definitely indicates that the pencil is for internal use and not for advertising purposes.

Leads and Erasers

Proper selection of leads and erasers resolves itself largely into the matter of price. You get what you pay for.

Equally as important as the selection of the quality of leads and erasers is the selection of the method of packing for distribution to employees. While in most cases the unit cost of both leads and erasers can be reduced by ordering a large quantity per package, this will not prove economical in the end for it will lead to waste. The standard individual packing for leads should not exceed one year's supply for each employee. The standard packing for erasers should not exceed a six months' supply per employee, for erasers have a tendency to harden if kept in stock too long.

The tubes in which the leads are packed should be selected with care. A tight fitting cap is essential in order that loss might be reduced to a minimum.

One company reduced lead consumption in mechanical pencils by distributing detailed instructions for the correct use of the pencils when the installation was first made, and then by distributing additional instructions about one year later.

Methods of Control

In order to guard against misappropriation and loss, the distribution of mechanical pencils must be controlled. Companies using mechanical pencils have adopted varying control policies. Some companies issue pencils free whenever needed but hold the issues to a minimum by keeping a record of the frequency with which employees receive them. Other companies allow either one or two pencils per employee per year

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Contributed by the Office Management Committee, George B. Webber, Chairman.

and charge for additional pencils. Still other companies charge the employees for each pencil issued after the initial supply. All companies issue leads and erasers free.

While the methods of controlling issues of mechanical pencils differ in detail, most companies provide some means of recording the number of pencils issued to each employee. Pencils issued over and above the prescribed allotment per employee are sold at cost. Defective or worn pencils are of course exchanged for new pencils.

Depending upon the distribution policy and the effectiveness of the control, the use of mechanical pencils permits actual savings up to 50% of the cost of wooden pencils. More and more companies are using mechanical pencils, as the advantages of these efficient writing tools become more widely known.

Accountants Complete Plans for 1935 Convention Sessions

ON June 1 the final meetings of the Managing and Advisory Committees of the Accounting Section were held at the Ritz-Carlton Hotel in Atlantic City, New Jersey, with a very gratifying attendance. The various committee chairmen stated that their reports would be available promptly to the Editorial Committee and an early distribution of the printed reports to Accounting Section members is anticipated.

A tentative time log of the sessions was presented which contemplates a change in the method of presenting the committee reports so as to enable more time for their discussion and also to provide for an early adjournment of the Thursday afternoon session at the convention.

Plans to date were submitted by the Committee on Arrangements for Luncheon Conferences indicating that this feature of the program will again prove a high light of the Accounting Section sessions.

It is planned this year to have only one general address at the convention in addition to the papers presented by the various committees.

Chairman Curren of the Exhibit Committee reported that the manufacturers of office labor saving devices had indicated a keen interest in exhibiting the latest developments in accounting machines and equipment in connection with the sessions.

On motion made and seconded the following resolution was offered and the secretary instructed to forward a suitably engrossed copy thereof to Mrs. William A. Doering.

On February 20, 1935, in the passing of William Arthur Doering, the Accounting Section lost one of its loyal and most valued members. Through his long service and active interest in the affairs of the Section and his many contributions to its success, he earned the respect and admiration of his fellow members.

As Chairman of the Section, his native skill and practical ability enabled him to discharge the duties of his office with credit to himself and lasting benefit to the Section.

As a friend, he was loved and admired for his kindliness, his genial personality and his manly spirit which will long endure as an inspiration to those who were privileged to be associated with him.

In his untimely death the Accounting Section has lost an outstanding figure and the members of the Section record with a profound sense of grief this tribute to his memory.

In recognition of his services to the Section and of the affection of his many friends in its membership, it is

RESOLVED, that a copy of this memorial, suitably engrossed, be sent to his family as an expression of deep sympathy in their bereavement.

The Calling Card of a Friend

MANY efforts have been made by advertising men in the gas industry to humanize the gas bill in terms of the services it represents. Under the title "The Calling Card of a Friend," The Bridgeton Gas Light Company, Bridgeton, N. J., publishes the following message in its June bulletin:

"The next time you see your gas bill, stop a moment to think about what you have received for the amount you are asked to pay. Compare the comfort, convenience, and leisure time you have bought with the price of anything else you purchase.

"You will find that gas is the least expensive thing you buy—and the most valuable. Should you decide that this is not true in your particular case, then you may be sure you are not allowing the Great American Servant to do all it can for you.

"Let it show you the joys of completely automatic hot water. Let it provide perfect automatic cooking—a cool kitchen and hours more time for recreation. Let it show you the way to the most silent, the swiftest, and most satisfactory automatic refrigeration in the wide world. Then you will agree that your monthly gas bill is indeed the Calling Card of a Friend.

"Ask about our special rates on Water Heating and Refrigeration.

"Use Gas, the Cleanest, Quickest, and Most Economical Fuel in America Today."

G. S. Hawley Locates an Original New Dealer

"NEW DEALS" and "share the wealth plans" are ideas so venerable that they are fairly covered with mists of antiquity, George S. Hawley of Bridgeport, Conn., president of The Bridgeport Gas Light Co., declared recently in a talk before the Rotary Club. To prove his point, Mr. Hawley cited the speech made 500 years ago by Jack Cade, English rebel, as paraphrased in Shakespeare's Henry the Sixth (Second part).

The *Bridgeport Telegram* comments editorially on Mr. Hawley's speech as follows:

"Cade (who was a real character and not a figment of Shakespeare's brain) said to his followers:

" 'Be brave, then for your captain is brave, and vows reformation. There shall be in England seven halfpenny loaves sold for a penny; the three hooped pot shall have ten hoops; and I will make it a felony to drink small beer. All the realm shall be in common and in Cheapside shall my palfrey go to grass. . . . And when I am king—as king I shall be—there shall be no money, all shall eat and drink on my score; and I will apparel them all in one livery, that we may agree like brothers and worship me, their lord.'

"There in one brief speech, as Mr. Hawley pointed out, in the program of a rebel who was also a rogue is the sum and substance of the 'modern idea.' Cade speaks for reformation; reform must precede recovery. 'Seven halfpenny loaves must be sold for a penny'; the government says so and that settles it. Never mind the miller or the grocer. 'The three hooped pot shall have ten hoops.' Early English boon-doggling! 'All the realm shall be in common,' in other words, Communism or share-the-wealth. 'All shall eat and drink on my score.' That means charging four billion dollars to the government of Harry the Sixth and taking it out of the taxpayers. 'I will apparel them all in one livery that we may agree like brothers,' complete regimentation.

"Have the brain trusters been reading Shakespeare?"

Customer Accounting Committee Meets

REPORTS of subcommittees were reviewed and revised at the second meeting of the Customers' Accounting Committee at Cincinnati on May 2, and T. S. Lever, chairman of the Accounting Machines Committee, reviewed the steps which have been taken to coordinate the work of his committee with that of the Customers' Accounting Committee. Following the meeting, the committee visited the offices of the Union Gas and Electric Company, where Ray E. Bacchus, assistant treasurer, and F. C. Reel showed the members how credit history records of customers are kept by the company.

COMMERCIAL SECTION

F. M. ROSENKRANS, Chairman J. W. WEST, Jr., Secretary C. E. BENNETT, Vice-Chairman

Experiences on the Firing Line

By WILLIAM F. HOPE

The Newport Gas Light Co.

FROM the "firing line" title your committee has so graciously assigned me, I assume that you are aware that there is a war going on. And what a war it is! Different in every respect from the many commercial engagements you and I heretofore have taken part in. Instead of it being a selling war, it is a buying war! Many of our customers are buying the wrong things —"wrong things" in my viewpoint being any appliances which do not burn gas and are not sold by yours truly.

Ask any of your men who were fortunate enough to be ringing doorbells ten years ago and the chances are they will tell you a lurid tale of the good old days when the faithful populace used to buy appliances they didn't want with money they hadn't got. Yes indeed, my friends, things have changed! Our customers are still spending the money they haven't got, but they are spending it for things without first seeking our counsel. The reasons for this state of affairs are as many as they are varied. Probably national advertising is mostly responsible for the change.

To bear out this contention of change, let me cite the case of refrigeration. A few years ago, our customers listened to us with mouths agape and drooling as we related the story of food preservation. Now they are meeting us at the door with a definite statement regarding the make of refrigerator they are going to buy.

Kilowatta Learning to Cook

Then too, our electric neighbor across the street has been suffering from a bad attack of ambition of late. For years he has been teaching his daughter Kilowatta to perform various chores of housework in the homes of our customers. Kilowatta being an apt pupil has learned about all she can regarding the menial household tasks such as cleaning rugs and washing clothes. Therefore, her old man thinks that it's about time that Kilowatta learned to cook. In fact, he is telling our customers that the gal can cook! That in itself is not so bad, and ordinarily we would let it pass as the deluded mutterings of a disordered mind, but for the fact that our neighbor is saying that Kilowatta will do the chef's work for chambermaid's wages.

Such are some of the conditions on the firing line today.

What are we, the gas company salesmen who make up the first line of defence and offence, doing to combat these new conditions which confront us along the battle front? Gentlemen, we are doing as we always have done,—fighting the battle as you in headquarters have directed us to fight, and with the weapons which you gentlemen have provided.

On my own little sector of the firing line, I have been fortunate. My directing heads have had the intelligence to meet changing conditions with change, and they are continuing so to do. However, after conversing with some of my brother gas gladiators employed on other sectors, I am convinced that they have had little change in either direction or weapons with which to repulse the attack. To you, their sales managers, if you are in attendance at this meeting and I certainly suspect that you are here, I make the following appeal and submit the following suggestions:

Streamline Sales Talks

First—Change your sales meetings—Streamline and air condition your sales talks. By streamlining, I mean cut out the exorting and evangelistic tactics. By air conditioning I mean,—well gentlemen, you can write your own definition of that. Anyway, as Major Stark told us at the recent air conditioning school, "It is much easier to heat air than to cool it."

Devote as much time as possible to educational work, but let your salesmen do some of the teaching. No matter how much you yourself can offer, the most avid sales student will tire of catching the drops of wisdom which drip from the mouth of the master. Give the boys a chance. They will appreciate you all the more when again you mount the rostrum.

Let us next consider contests, Gentlemen: Let us continue to have them, by all means! I like them! Through the medium of contests, I have seen the world much better than I would have, had I taken one of the much advertised conducted tours. Many times have I made dashes to the poles, gone up in balloons or engaged in treasure hunts upon the Spanish main. And all without leaving my own drab territory! Through contests I have with relish been awarded everything from a bag of green lollypops to a gold watch. With not so much relish I have accepted the title of "weak sister" and "also ran."

Let us cut out the last two prizes from our contests, Gentlemen. How? Set up your contest quotas with regard to the territories served by your salesmen and also gauge those same quotas by each individual salesman's capability to produce. Many a so-called "weak sister" is really a big strong brother in his own territory.

But I digress. My assignment is to relate how I have made sales—not why I have not. Now this part of my narration will unavoidably be punctuated by a series of toots on my own horn. If at times these toots seem too numerous, kindly remember that the call I am sounding is reveille—not taps.

Probably the thing which has helped me most in getting the occupants of my territory to autograph my order book is the fact that I try to do a reasonable amount of work every day. By "reasonable amount," I mean all the work it is humanly possible to accomplish in a territory which is flanked by several bathing beaches and that contains innumerable park benches and many other enervating divertisements.

My work is done with the knowledge that I am holding down a good job, and that I wish to continue to do so. Not that any of my directing heads have ever insinuated that I would find myself a buck private in the army of the unemployed if my firing line marksmanship didn't improve. That is where the intelligence I attributed to those geniuses comes in. They do not want me to spend valuable time in the contemplation of greener fields through the medium of the "Salesmen Wanted" column in the morning papers. When things go haywire and sales bullets miss their mark, ways and means for improvement are discussed by all concerned, which of course includes myself.

Confidence in the Salesman

Another feature that has helped me to insert numerous gas appliances into the homes of my customers is that I am allowed to make recommendations regarding allowances for old equipment, terms of payment and nearly any other situation which may arise within the limits of my territory. Don't gasp, Gentlemen! Remember, my company has faith and confidence in my integrity. Otherwise, why would they allow me to represent them in a district which embraces approximately one-half of their metered customers, and which also probably includes many of their unmetered customers too?

Paper presented before the New York—New England Regional Sales Conference, New London, Conn., June 27-29, 1935.

Sales campaigns have also been of great help to me on the firing line. These campaigns have been planned with proper thought in regards to their number and their length. Short drives have seemingly given better results than longer ones. Perhaps my endurance is not of the lasting kind; I do know that I can run fifty yards much better than I can one hundred.

Closely connected with the results of our campaigns is advertising. While our advertising program is ordinarily predicated upon the "constant dripping, wearing away the stone" theory, during sales campaigns the "dripping" assumes torrential proportions.

Many of you are no doubt wondering when I am going to get down to cases and reveal the magic words with which I enveigle Mr. and Mrs. John J. Public into purchasing equipment that will cause their meter to breathe more deeply of the heat laden elixir which we purvey. Gentlemen, that time is now at hand!

When I talk to a prospect, I do so with proper respect for the elastic qualities of the truth. Experience has shown me that the farther you stretch it, the harder it snaps back. That statement probably sounds like little Rollo in the first reader. Nevertheless, I have found it true. Nothing has a recoil like an appliance that has been misrepresented.

As I deliver my message, I keep one eye on the pressure gauge. A patent medicine sales talk is no way to improve a ledger account which is suffering from malnutrition. The customer might decide things were indeed bad, and decide upon a course of electrical treatments.

My attitude toward my customers is that of a friend who is helping them to buy something, rather than that of just another salesman who is trying to sell them an appliance.

Such, I feel, is the sum and substance of the things that have helped me to better sell gas and gas appliances.

This narration would not be complete without mentioning the splendid cooperation given me by the many utility company employees I have come in contact with during my career as a gas appliance salesman. Especially do I commend the employees of The Newport Gas Light Company where I am now employed. Without their help, far fewer sales trophies would hang in our dugout.

May Winners Announced in Refrigeration Contest

J. J. Quinn

MORE than 150 individual salesmen were winners of cash awards for their May sales of gas refrigerators in the nationwide "Prosperity Cup" contest being staged by the American Gas Association Refrigeration Committee. Seven gas companies were announced as winners in their respective divisions.

In announcing the May winners, John J. Quinn, chairman, indicated that the campaign was proving to be one of the most successful ever conducted by the Association. May sales of gas refrigerators were far ahead of those in April in which record sales had been made, and reports from the field show even greater prospects for June, the last month of the contest.

Some idea of the extensiveness of the campaign can be gathered from the fact that salesmen who have won awards for the month of May are distributed throughout thirty-two states of the union. When the returns are in for June, the committee is confident that there will not be one of the entire forty-eight states that will not be represented.

The seven "Prosperity Cups" to be allotted to the gas companies in their respective divisions which make the highest records in the contest will be presented at the Association's annual convention to be held in Chicago in October.

Gas companies who were winners in their respective divisions for May and their sales managers are as follows:

DIVISION A

First, The Philadelphia Gas Works Company, Philadelphia, Pa., H. S. Christman.
Second, Boston Consolidated Gas Company. Boston, Mass., John J. Quinn.
Third, The Brooklyn Union Gas Company, Brooklyn, N. Y., Hugh Cuthrell.

DIVISION B

First, Portland Gas & Coke Company, Portland, Ore., B. H. Parkinson.
Second, Minneapolis Gas Light Company, Minneapolis, Minn., E. J. Boyer.
Third, Columbus Gas & Fuel Company, Columbus, Ohio, M. K. McKelvey.

DIVISION C

First, Birmingham Gas Company, Birmingham, Ala., William A. Hudson.
Second, Southern Counties Gas Company of California, Santa Ana, Calif., L. G. Moore.
Third, Worcester Gas Light Company, Worcester, Mass., B. J. Bean.

DIVISION D

First, Ohio Fuel Gas Company, Springfield, Ohio, J. H. Guthrie.
Second, Ohio Fuel Gas Company, Newark, Ohio, E. L. Howard.
Third, Brockton Gas Light Company, Brockton, Mass., J. F. Tullie.

DIVISION E

First, Florida Public Service Company, Orlando, Fla., H. R. Cloud.
Second, North Penn Gas Company, Port Allegany, Pa., George W. Keith.
Third, Chattanooga Gas Company, Chattanooga, Tenn., C. E. Dougherty.

DIVISION F

First, Lynchburg Gas Company, Lynchburg, Va., E. V. Bowyer.
Second, Montana-Dakota Power Company, Rapid City, So. Dak., C. B. Aasness.
Third, Keystone Gas Company, Inc., Olean, N. Y., E. C. Wilson.

DIVISION G

First, Broad River Power Company, Florence, S. C., B. W. Garvin.
Second, The Gas & Electric Appliance Co., Barnesville, Ohio, R. J. Miller.
Third, Willmar Gas Company, Willmar, Minn., J. O. Woltz.

Awards Made in Skit Contest

WINNERS of the skit contest which was promoted by the A. G. A. Home Service Committee during the spring months have been announced by Ruth Soule, of The Brooklyn Union Gas Company, chairman of the subcommittee in charge of the contest. The scarcity of skits to promote interest in gas and gas appliances led to the contest which closed May 1. Thirty-nine skits were submitted, representing every section of the country.

First prize of $15.00 was awarded to Miss Claribel J. Adams, Washtenaw Gas Company, Ann Arbor, Mich. The next two prizes of $10.00 each went to W. D. Thurber, Southern Counties Gas Company, Los Angeles, and Miss Madge Peifer, The Syracuse Lighting Co., Inc., Syracuse, N. Y. Three prizes of $5.00 each were awarded to E. D. Smith, The Dayton Power & Light Co., Dayton, Ohio; H. D. Berry, Northwestern Utilities Ltd., Edmonton, Canada, and Miss Myrtie Lloyd, The Dayton Power & Light Co., Dayton, Ohio.

Five skits which received honorable mention were submitted by the following:

Mrs. Florence M. Wren, Public Service Electric & Gas Company, Hackensack, N. J.; R. H. Lowe, Malden & Melrose Gas Light Co., Malden, Mass.; Miss Helen M. Kuehn, Northern States Power Co., Stillwater, Minn.; Miss Gladys M. Cross, Beverly Gas & Electric Co., Beverly, Mass.; and Thomas Bradshaw, Spokane Gas & Fuel Company, Spokane, Wash.

The eleven skits will be assembled at A. G. A. Headquarters into a pamphlet available to the industry. A further announcement will be made about August 1.

W. F. Eve, Jr., Dies

W. F. EVE, JR., commercial manager of the Atlanta Gas Light Company, Atlanta, Ga., died recently after an extended illness. Prior to his affiliation with the Atlanta company, Mr. Eve had been local manager of the gas utility in Montgomery, Alabama.

Industrial Gas Advertisements for August

"GAS... THE BEST FUEL FOR USE IN A BAKERY"
SAYS H. C. BALSIGER . . . PRESIDENT ADVANCE BAKING CO., KANSAS CITY, MO.
"Our test experience, as well as current inspections, convinced us that for cleanliness, ease of control, and flexibility, gas is the best fuel for use in a bakery."
Gas is clean, economical, easily regulated, instantly available, and quick-heating. It provides an even distribution of heat that bakes uniformly throughout the oven, and quality is uniform, day in and day out. Gas eliminates fuel storage and handling costs, gives more working space, saves time, and cuts labor costs.
Furthermore, new gas research shows how to effect a real saving in baking costs. Progressive bakers everywhere are reappraising their baking operations in the light of this new research. Your local gas company industrial engineer will be glad to study your requirements and to show you just what gas can do for you—without obligation, of course. Get in touch with him, today.
Important!
A copy of an American Gas Association Research Report, "The Application of Heat to Bread Baking," can be obtained from your local gas company, or direct from American Gas Association. Write for it.
THE TREND TODAY IS TO GAS
AMERICAN GAS ASSOCIATION
INDUSTRIAL GAS SECTION . . . 420 LEXINGTON AVE., N. Y. C.

Left—Reproduction of full-page advertisement which will appear in Bakers Weekly, *August 3, and* Bakers Helper, *August 24*

Below — Reproduction of double-page advertisement which will appear in Iron Age, *August 1 and* Steel, *August 13*

WHERE EXACT TEMPERATURES AND CONTROLLED ATMOSPHERES ARE IMPORTANT . . . GAS IS THE IDEAL INDUSTRIAL FUEL
Recent research, sponsored by the American Gas Association, has developed important new information about gas and gas combustion which is of vital interest to every industrial executive and engineer.
This new knowledge of gas—with particular reference to the effect of accurately controlled temperatures and furnace atmospheres—not only makes gas available for many applications on a more economical basis, but also makes possible definite improvements in quality, and substantial reductions in cost.
These important developments make gas more than ever the ideal industrial fuel. Why not investigate its possibilities in your own plant? Your local gas company industrial engineer will be glad to tell you about the new knowledge of gas that is available today and to show you how it may affect your own problems. Get in touch with him today!
Exact temperature requirements obtained in this gas-fired annealing furnace.
Discharging end of gas-fired billet heating furnace.
GAS . . . THE PREFERRED FUEL FOR
Hardening
Carburizing
Annealing
Drawing
Tempering
Normalizing
Melting
Welding
Forging
Galvanizing
Case Baking
Sherardizing
Malleabilizing
And Many Other Processes
Controlled atmospheres in this gas-fired forging furnace (diffusion combustion) give scale-free forgings.
IMPORTANT!
Copies of the following research reports are available to interested executives, WITHOUT CHARGE.
1. The Influence of Atmosphere and Temperature on the Behavior of Steel in Forging Furnaces.
2. The Surface Decarburization of Steel at Most Forging Temperatures.
3. Baking Practice for Oil—Sand Cores.
4. The Application of Heat to Core Baking.
5. The Effect of Operating Temperatures on the Combustion of Industrial Gas.
Bulletin No. 1—Study of Combustion Chamber Wall Temperatures.
Bulletin No. 2—Practical Exploration of Newly Developed Combustion Knowledge.
6. A Study of the Characteristics of Burning Gas With Preheated Air.
See your local gas company, or write direct to American Gas Association, 420 Lexington Avenue, New York City, N.Y.
AMERICAN GAS ASSOCIATION
INDUSTRIAL GAS SECTION . . . 420 LEXINGTON AVENUE, NEW YORK CITY
THE TREND TODAY IS TO GAS

HOME SERVICE COMMITTEE

MARGARET NEVINS, Chairman JESSIE McQUEEN, Secretary

Informal Floor Demonstrations Aid Sales

SALES floor demonstrations to which prospects receive personal invitations have proven an effective means of increasing sales of seasonal appliances. The sales department of the Consolidated Gas Company of New York has found that this activity is decidedly more productive of sales than the weekly lecture demonstrations to which women come expecting an afternoon of entertainment.

The preliminary step in such a sales program is to give a demonstration preview of new models for the salesmen at one of their regular meetings. After seeing (and tasting) the possibilities of the range, the salesmen pass their enthusiasm on to prospects and invite them to attend a demonstration the following week. In addition to personal invitations extended by salesmen, informal letters are sent to other prospects as follows:

"The home service division of the Consolidated Gas Company invites you to attend the Spring Preview of modern gas ranges and refrigerators on Thursday afternoon, May 9, from 1:30 to 5:00 P.M., on the sales floor at 120 East 86th Street.

"A demonstration of these gas ranges will be held and new developments in broilers and deep well cookers will be the high spot of the demonstration.

"Come into the office on Thursday and see the newest equipment actually being used by our home service demonstrators."

Window Poster Used

A window poster announcing a "Kitchen Matinee" to passers-by adds to the spirit of the "Spring Preview."

The ranges being demonstrated are placed in strategic spots on the sales floor to permit a maximum number of people to move around all sides to view the activity. Customers enjoy the freedom of moving about from one appliance to another and salespeople have an opportunity to answer their casual questions and thus make a friendly approach.

Recipes related to the demonstration are given out and samples of food are served, but emphasis is placed on appliances being demonstrated rather than on the food prepared.

Connected refrigerators contain foods which demonstrate various uses of the Electrolux. Colorful salads, molded desserts, trays of colored ice cubes and ice cream add appeal to the sales story.

Interest in kitchen planning is aroused through illustrated talks and as a result prospects have been interviewed and kitchen plans executed.

Demonstration on a griddle top

Results in sales indicate that these informal demonstrations are an effective means of closing sales and stimulating interest of potential prospects. Ten demonstrations over a period of two months have resulted in $7,115 immediate sales, with prospective sales of $16,600. The demonstration cost averages two cents per person attending (4,082 customers).

Incidentally, small appliances displayed on the sales floor, such as the toaster, waterless cooker and Connolly oven, are shown with foods which have been prepared in them. Floor demonstrations of these small appliances aided by window displays and bill enclosure promotion, have increased sales 25 to 50 per cent. The demand for instructional booklets pertaining to appliance use indicates that this material is a worthy substitute for the usual recipe sheet. Sales executives have expressed the feeling that recipes are now available from so many sources that entirely different instructional material is desirable. As a result, the Consolidated Gas Company does not maintain a mailing list for recipes, but offers a new booklet each month through coupons in "Greater Service News," the monthly bill enclosure. The purpose of announcing these booklets in this way is to require customers to come in to the sales floors to obtain them, thus giving salespeople an opportunity to meet and interest prospects in new appliances. In addition to these monthly booklets, new sheets of tested recipes are available each week at the district offices. Only requests for special recipes are mailed to customers from the main office, thus bringing as many people as possible to the sales floors.

The Consolidated Gas Company of New York and its affiliated gas, electric and steam companies pay the highest tax bill in New York City.

First gas pipe line was made out of gun barrels by a London blacksmith, March, 1813.

Crane Appoints R. I. Smith

THE appointment of Robert I. Smith as factory representative of the Premier Water Heating and Gas Boiler Division to the Philadelphia and Baltimore Branches of the Crane Company, has been announced by Stanley Jenks, Eastern Division manager. After an intensive training at the La Porte plant in factory products, Mr. Smith started his duties at the Philadelphia branch office of the Crane Company, June 1.

INDUSTRIAL GAS SECTION

J. F. QUINN, Chairman C. W. BERGHORN, Secretary C. W. GALE, Vice-Chairman

The Importance of Gas Fuel in Modern Power Generation

By W. W. GERMAN*

Industrial Gas Engineer, Montana Power Co., Butte, Mont.

GENERATION of power is usually associated in the average person's mind with the use of crude fuels but of late there has been an increasingly popular swing to a refined fuel which is higher priced on a straight B.t.u. comparison, but which will oftentimes give a lower over-all plant cost per unit of production. Such a fuel is gas, either natural, or mixed natural and manufactured gas. The utilization of this fuel permits astounding flexibility in plant operation, decisive reduction in maintenance and often considerable labor saving.

The use of gas fuel in steam generation and in internal combustion engines is not of recent origin but considerable attention has been focused on its application within the last few years due to the remarkable growth in number, size and length of natural gas transmission lines. Practically all of these lines are loaded heavily with heating load, a seasonal demand, and one that requires a large off-peak balancing load to show the best results from the standpoint of return. Industrial boiler load offers the best possibility from the standpoint of quickly picking up the line capacity and has been so used in many projects. In addition, off-peak usage may be most readily secured in large amounts through boiler load if the rate setup permits.

Fuel Flexibility Important

The practical application of gas to this type of load, however, cannot be the same as that utilized in firing boilers located closely adjacent to gas fields, where the fuel is competitive in price to solid fuel, and where no particular refinements in application or revisions of operation are necessary.

Convenience and cleanliness mean little to the average modern plant operator unless definitely translated into dollars and cents. Flexibility, instant response to plant demands, elimination of soot blowing, reduced maintenance on furnace refractory, automatic or semi-automatic control with reduction in firing labor, lessened stand-by or bank loss, and increased capacity of installed units, however, can be evaluated in a lowered over-all steam cost, which is primarily the object of the operator. The additional space released from fuel storage, the remarkable record for continuity of fuel delivery, the absence of the necessity for payment of the fuel until it is consumed, and the almost entire lack of maintenance on the fuel distributing, regulating, and burning equipment are also items on which a definite dollar value may be placed.

Ingenuity Nets Savings

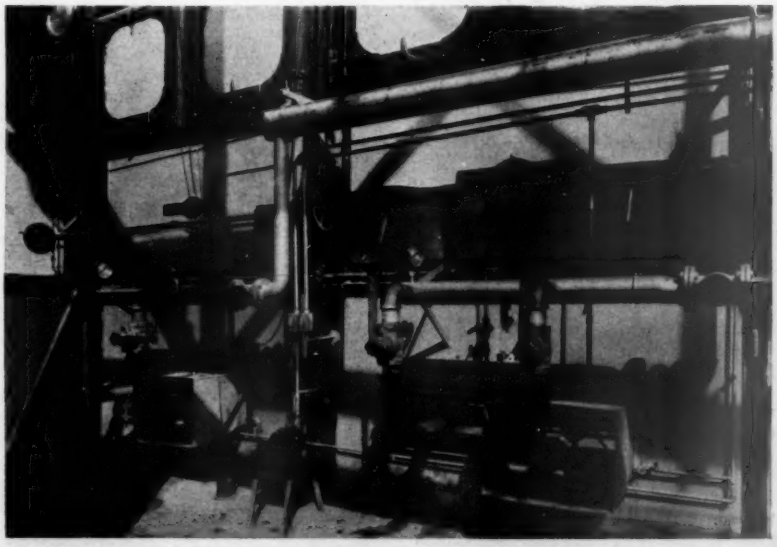
With the above advantages, however, the monthly fuel bill must be held low enough to justify the retention of the fuel. To do this on all properties except those having a strictly competitive rate it is necessary to use the most modern equipment and controls. In addition, modification of the operating practice of the plant, segregation of parts of the load where possible, and the handling of these parts through isolated automatic boilers, have proved desirable where indicated. Most industrial plants have some heating load, in addition to their process and power load and some ingenuity in zoning the first two will result in considerable saving. Such saving is actually a reduction in steam usage but is reflected desirably in the monthly gas bill. To a lesser degree these economies may be applied to plants burning solid fuel but they reach their full expression only in gas-fired installations due to the inherent flexibility and responsiveness of the fuel.

Some or all of these methods have been used in order to secure and retain boiler load by utilities throughout the country who are in a position to handle this business. The use of draft controls which will definitely maintain a high combustion efficiency over a wide operating range has also received a decided impetus during the last few years.

The Hot Water, Steam and Power Generation Committee of the Industrial Gas Section will attempt to secure as much information on the practices of the various companies engaged in this line of work as possible. The experiences of these companies particularly on the more modern type of equipment now available should form a valuable guide in securing and retaining marginal business.

Fields for Investigation

A questionnaire has been prepared covering some of the practical details encountered in the conversion of power type boilers and is being submitted to the operating companies who possess this load. Varying conditions permit considerable divergence in practice and an attempt will be made to classify this practice.



Steam powered boiler converted to gas firing. Latest type automatic steam pressure controls

*Chairman, Hot Water, Steam & Power Generation Committee, Industrial Gas Section.

The problems encountered in stand-by for off-peak jobs, and in some cases for firm gas load, the use of controls, minor changes in baffling to increase efficiency and capacity, adoption of insulating refractories to lessen heating up time, all offer a fruitful field for investigation.

The application of gas in internal combustion engines either for direct drive or for electrical generation offers a wide field for the development of new business. Here again certain applications are seasonal in character and offer an excellent opportunity to improve the pipe-line load factor. Convertible gas Diesel engines are available in which a fuel exchange may be made in a few hours. Conversion of existing small automotive type gasoline engines is extremely simple and their use is spreading rapidly. It is the intent of this committee to secure information which will enable gas engine power cost sheets to be made up for different sizes of engines operating at specified load factors. These will serve to visualize the various items of cost and reveal the extreme economy of this source of power. In addition, they will enable a quick check on the competitive status of a given job.

A more widespread distribution of information on the possibilities of this load is desirable and it is gratifying to note the increased publicity that has been extended to articles covering gas engine applications. Heretofore, this load has been localized in certain sections but it is to be hoped that, with the aid and cooperation of the manufacturers of this type of equipment, more companies will actively engage in the promotion of gas engine power.

Gas Air Conditioning Units Impressive at N. J. Show

THE New Jersey Air Conditioning Show held in Newark, N. J., June 3-8, attracted 4,252 people, consisting largely of home owners, store owners, architects and builders, professional men, executives and heating and plumbing contractors. The show was sponsored by the air conditioning department of the Public Service Electric and Gas Company, under the direction of H. P. Morehouse, general air conditioning representative.

Most types of air conditioning equipment now being manufactured were shown. Among the exhibits that attracted much attention was the new gas-fired summer air conditioning system which uses Silica Gel to remove the moisture on hot humid days instead of doing it with ordinary methods of mechanical refrigeration.

Builders seemed particuluarly interested in the possibilities of winter air conditioning with gas inasmuch as the units require extremely small floor space, are economical to operate and have a low initial installation cost.

Considerable interest on the part of architects and builders was reported. The architects had a booth as well as the Master Plumbers Association. The plumbers, who attended in a body, were impressed with the advances made in gas heating units in the last two years, particularly in appearance.

Gas Exhibit at New Jersey Hotel Show

Exhibit of gas-fired kitchen equipment for commercial use which was the outstanding feature of the 17th annual Spring Hotel Exposition held in the Ambassador Hotel in Atlantic City, May 6-10. The exposition was held under the Auspicies of the New Jersey State Hotel Association and the gas exhibit was sponsored by the New Jersey Gas Association in cooperation with the gas companies of New Jersey and manufacturers of gas-fired kitchen equipment.

Manufacturers displaying equipment were: American Stove Company, Standard Gas Equipment Corporation, Detroit-Michigan Stove Company, Savory, Inc., Yarnall-Waring Company, Rue Manufacturing Company and The G. S. Blodgett Company.

T. B. Gregory Elected President

T. B. GREGORY, vice-president of the Lone Star Gas Corporation, Dallas, Texas, and pioneer of the natural gas industry in the United States, recently was elected president of the board of the corporation to succeed the late George W. Crawford.

U. G. I. Engineer Dies

JOHN MORRELL RUSBY, an engineer who had been with The United Gas Improvement Company, Philadelphia, Pa., since his graduation from Stevens Institute of Technology 50 years ago, died May 27 at his home in Haverford. Mr. Rusby was a member of the American Gas Association.

1935 LEGISLATIVE PRODUCTS OF FORTY-FOUR STATES

(Continued from page 246)

they shall be taxed thereon accordingly as other property is taxed in the state.

Direct Utility Taxes

Arizona reduced its 1½% tax on gross business of manufacturers, transportation, utilities, newspapers and radio to 1%. An occupational license tax on corporations operated for profit was imposed in Georgia. A bill was enacted in Kansas assessing 1/5 of 1% of gross earnings for expense of the corporation commission with a $100,000.00 limit from all utilities of the state. The inspection and supervision fees of public utilities subject to control of the Louisiana Public Service Commission were increased. In the same state bills were passed imposing a severance tax on gas and a public utility license tax of 2% of gross receipts of public utilities. New Jersey taxed companies engaged in the production and sale of hydro-electric power.

New Mexico passed a Franchise Tax Bill to provide increased revenue for relief purposes to match Federal appropriations at the rate of $1.00 per each $1,000 of par value of capital stock issued at the value of $100 per share. In the same state under the new gross receipts tax law the rate for utilities remains at 2%, the same as the old law.

The North Carolina Act of 1935 has become law. Important changes are embodied in the Franchise Tax. The rate of tax on domestic corporations is changed from $1.50 to $1.75 for each $1,000 of the amount of capital stock surplus and undivided profits. The rate of tax on foreign corporations is changed from $1.50 to $1.75 for each $1,000 capital stock; surplus and undivided profits allocated to the State Public Utilities are subject to this tax only to the extent that the franchise tax exceeds the gross receipts or license tax imposed.

In Oklahoma the gross production tax on gas, oil and minerals was increased from 3% to 5%. This state authorized cities to impose a 2% gross utilities tax on utilities operating without a franchise. Pennsylvania increased the rate of tax on gross receipts of public utilities from 8 mills to 14 mills for the calendar years 1935 and 1936. In Tennessee public utilities inspection fees were changed. The Washington Revenue Act of 1935 provides a tax of 2% on the gross operating revenues of gas companies and 3% on electric companies, these are in addition to regular *ad valorem* taxes.

Among the direct tax measures which failed to pass are: an excise tax on public utilities in Colorado; 1½% tax on gross earning of gas and electric companies in Connecticut; a bill imposing a 3% gross income of all utilities to go to municipalities in Indiana; an attempt to increase the severance tax in Michigan; a special tax on gas and electricity in Arkansas.

In Illinois a bill taxing gross receipts of water, gas and electric companies, both municipal and private, is pending.

The Indiana House killed a bill which would have exempted municipal utility plants from taxation. The Florida Legislature turned down a like proposal and also one taxing communication and electric lines at $1.00 per mile and 10¢ a pole.

Sales Taxes

Sales taxes including tax on gas and electricity were levied in the following states: 2% in Arkansas—to be added to bills; 2% in Colorado, 1% in Missouri, 2% in North Dakota, 1% in Oklahoma, 2% in South Dakota,—may be added to bill; 1% in Vermont and Wyoming, while similar taxes, exempting gas and electricity were approved in Arizona, Maryland, New Jersey, and Washington. It has been reported that a total of twenty-three states now have a sales tax.

Sales tax bills were introduced but failed to pass in Connecticut, Florida, Iowa, Kansas, Minnesota, Nebraska, Nevada and Texas and others are pending in Alabama, Illinois, Massachusetts, Missouri, Nevada and Tennessee.

Taxes on Natural Gas and Pipe Lines

As a result of the activities of the coal interests, bills were introduced in a number of states to tax natural gas and pipe lines. Such bills were known to have been introduced in Arkansas, California, Colorado, Illinois, Iowa, Minnesota, Nebraska, North Dakota, South Dakota, Tennessee, Utah and West Virginia. No record of the passage of any of these bills has been received, and in most cases we are advised that the bills were defeated.

Chain Store Tax

The wave of measures to tax chain stores on a graduated scale, based on the number of stores operated, started in previous years continued to surge over the country. At the close of last year, 17 states were levying discriminatory taxes against chain stores either according to the size of the organization under one ownership or the number of stores. In some cases stores operated by public utilities for the merchandising of appliances fall under the purview of such acts. Our records indicate that chain store acts passed in Florida, Iowa, North Carolina and South Dakota. It is questionable whether the Iowa measure is constitutional. Similar legislation failed to pass in New Hampshire, Oklahoma, North Dakota, Texas and Kansas and is pending in California, Illinois, Nebraska, Pennsylvania and Tennessee.

Social Security Legislation

So-called social security legislation, that is, old age pension and unemployment insurance measures, is ranked as of second in importance, the first being taxation, of all classifications of legislation considered by the 44 states this year. At the outset when Federal action seemed imminent, social security bills were introduced by the score in practically all the legislatures in session. It was a frenzied attempt to get on the band wagon. When no action was forthcoming from Congress the state legislatures for the most part postponed final action pending the passage of the national economic security bill.

However, a number of states adopted old age pension plans. Unemployment insurance legislation was enacted in New Hampshire, New York, North Carolina, Utah, and Washington. The New York plan goes into effect next March, while the others await Federal legislation. Wisconsin had previously adopted an unemployment insurance plan.

Typical Public Ownership Legislation

The Indiana Legislature passed a bill permitting municipalities to construct and operate utilities any place in the counties in which such municipalities may be located; a similar bill was defeated in North Dakota. West Virginia refused to give municipalities broad authority to operate utilities but did authorize cities to extend utility service beyond city limits to persons not already obtaining service from existing utility.

In New Jersey the Assembly defeated a bill that would have enabled municipalities to borrow PWA money for municipal plants. The Maine Legislature refused to authorize municipalities to operate municipal plants. The Connecticut House rejected two bills to facilitate municipal acquisition of utility plants. The Massachusetts House likewise killed two bills designed to give cities and towns authority to go into the electric business.

A Minnesota bill passed amending the present law with regard to municipalities serving outside their corporate limits. Under the new law the proceedings can be initiated by a two-thirds vote of the governing body instead of by a three-fourths vote and the extension limit is made 30 miles instead of 25. Approval by the voters was not changed. Among the bills in this state which failed was one prohibiting discrimination in rates and another authorizing an interim commission to investigate public utility activities in the legislature.

In Montana bills which would have allowed promoters to get 20% of the utility customers in any individual community, start a rate hearing and thereby secure authority for the promoters to hire engineers, accountants and employees, *ad lib*, luckily failed.

In Washington a law was enacted providing for the funding or refunding of outstanding warrants or bonds issued for the purpose of purchasing, acquiring or constructing any public utility, or for mak-

ing additions or betterments thereto, without requiring an election by the qualified voters, the thought evidently being to make it easier to finance public utility proposals.

The Florida Legislature failed to pass several bills seeking to remove the mandatory requirements now imposed on cities and towns by general law that, before a municipality establishes an electric or gas plant, it must offer to purchase any existing plant operating in said city or town.

A joint resolution was adopted in Washington which will place a constitutional amendment on the ballot of the next general election permitting the state to go into the power business.

PWA Measures

The legislative proposals drafted, forwarded and recommended for enactment by the Federal Public Works Administration were considered in many states. These bills, about twenty in number, were popularly referred to as "Ickes" or "PWA." They are vicious in their provisions to facilitate government loans for municipal utility projects. While the bills were passed in some states, generally speaking they proved none too popular with the legislators. Morris L. Cooke, in charge of promoting rural electrification for the New Deal, is quoted as having said that only twelve states passed the permissive legislation to facilitate cooperation with the Federal government in rural electrification.

Commenting on the receipt of the twenty odd "Ickes" bills in Iowa a newspaper editorial stated: "No one can wade very far into the bills submitted for Iowa adoption by Secretary Ickes as public works administrator without being torn between amusement and indignation." In his veto message on the PWA "electric membership corporation" bill the Governor of South Dakota gave his reason as "might in many cases result in hardships upon existing municipal or privately owned plants."

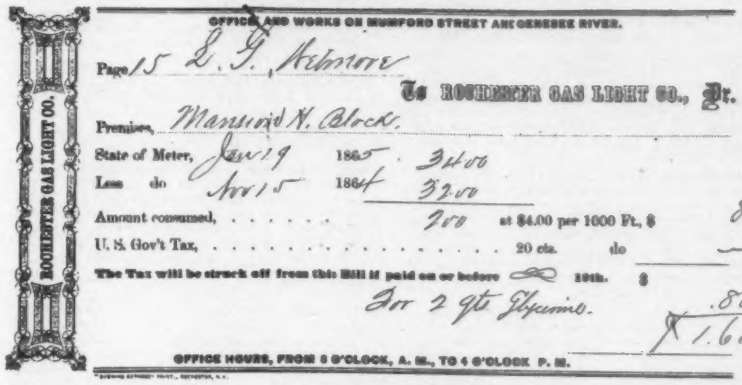
Although the importance of the situation in regard to the PWA legislation is fully recognized, a review of the results in detail would require an article in itself.

Oh-Hum Legislation

Legislation in Colorado requiring candidates for public office to disclose their ownership in public utilities securities failed to reach the statute books. A resolution failed of adoption in North Dakota requiring Senators retained by public service corporations to file list of corporations they service. The Oklahoma Legislature thought better than to vote favorably on a bill making it unlawful for public service corporations and other firms and corporations to contribute to elections.

There is hardly any limitation on the conclusions that might be reached concerning the proposed legislation affecting public utilities, that failed to pass and did pass. However, it is hoped that this résumé, though incomplete, may serve to indicate the trend. The state legislative season was an unusual one and, everything considered, public utilities might have fared lots worse.

Rochester's Old Gas Bills Supply Missing Rate History


ROCHESTER GAS LIGHT CO.

OFFICE AND WORKS ON MUMFORD STREET AND GENESEE RIVER.

Page 15 E. J. Atkinson

To ROCHESTER GAS LIGHT CO., Dr.

Premises, Mansion N. Block.

State of Meter, Jan 19 1865 34 00

Less do Nov 15 1864 32 00

Amount consumed, ... 200 at $4.00 per 1000 Ft, $ .80

U. S. Gov't Tax, ... 20 cts. do —

The Tax will be struck off from this Bill if paid on or before 20th. $

For 2 qts Glycerine. .80

1.60

OFFICE HOURS, FROM 8 O'CLOCK, A. M., TO 4 O'CLOCK P. M.

Winning gas bill

WITH the view of obtaining as complete a history as possible of the gas and electric rates charged prior to January 1, 1916, in the City of Rochester, the "Old Bill" Contest was held from April 28 to May 6. That many a missing gap in the company's rate history is now filled can best be judged from the fact that some 350 customers submitted about 800 bills, 600 of them gas, for cash awards which totalled $77.50, to ten winners, 4—$10 firsts, 3—$7.50 seconds and 3—$5 thirds.

The bills submitted helped picture the growth of the present organization from its beginning in 1848 as The Rochester Gas Light Company. The oldest gas bill, September 1, 1850, issued by the Gas Light Company was entered by an employee, Charles S. Jennings, who was awarded the fourth (special) 1st prize.

On the next oldest bill, November 15, 1864-January 19, 1865, in addition to the rate, two other items of particular interest stand out—a U. S. Government tax of 20¢ per "M" which was "struck off" if the bill was paid on time, and a charge for 2 quarts of glycerine!

These days of High Cost of Living had nothing on the Good Old Days in so far as gas and electric rates were concerned. Gas in those days was billed at the rate of $4 per thousand cubic feet, compared to the present general rate of $1 and less per thousand cubic feet; and meters were read and bills issued once every three months. Then, and for quite some time after when billed monthly under reduced rates, few bills were found with consumptions over 1,000 cubic feet. In those days gas was a luxury, today it is a necessary service.

The oldest electric bill was for $18 for the "Fan season, 1896" although electric service had been available since the late 80's. The next oldest bill, November 30, 1898, was at the rate of 14¢ per kilowatt-hour; later bills showed this rate reduced to 12¢, then 8¢, until today the average domestic rate is about 5½¢ per kilowatt-hour.

The combination electric and gas bills (one bill for both services) were first issued in 1915; the three oldest of these bills were all within a week of each other —November 12, 16 and 18.

The finding of old bills was a matter of only a few moments for some while others spent hours in their search. The family Bible in several instances was the hiding place—in one case the bill had served as a marker for years; more than one old trunk was thoroughly searched, recipe books (the backs of bills had recipes written on them), old magazines, old letters and files brought to light not only old bills but many interesting, amusing and long-forgotten memories.

Many reasons for having saved the bills were offered by customers who participated in the contest: One man tacked them all in a row on an old board in the attic—it helped decorate the place. Another keeps a collection of old bills. One youngster read the contest advertisement to his mother and curiosity prompted her to search among a bunch of old family pictures. One gas bill was saved because it was the first one in the neighborhood. Another bill brought recollections of the first days of one man's marriage for he had saved the bill as the first one ever paid by himself.

One family uses their old gas bills to prove that their home has been lived in by four generations; to another family the old bills served as a record or history of all the homes lived in. In searching for the bills several customers found old gas and electric deposit receipts which they promptly redeemed and so were repaid for their interest in the contest.

Personnel Service

SERVICES OFFERED

Industrial Sales Engineer. Experience gained with Eastern utility. College graduate. Member ASME. Qualified make surveys, design burners, piping and auxiliaries. Familiar with all principal metallurgical operations, ceramics baking, etc. Understands space heating and air conditioning. Age, experience, ability sufficient take charge territory or department. Outstanding sales ability. **950.**

Manager—Fifteen years' practical experience in gas industry operating small properties, coal, water and butane gas. Familiar with high and low pressure and have made change over coal gas to water gas and water gas to butane. Am interested in small plants and know what it means to maintain friendly public relations. **951.**

Industrial gas sales enginer (35) six years' experience large Eastern combination company. Broad experience in sales, installation and service of varied industrial appliances as: bake ovens, boilers, furnaces etc. Familiar with all competitive fuels, preparation of estimates and cost surveys, and economic rate determinations. University graduate, married. **952.**

Engineering graduate with several years' varied experience in design, manufacture, erection and operation of gas plant equipment, and in the supervision of **plant operation,** desires supervisory or technical position with company producing blue or carburetted water gas alone or in connection with coal, refinery or natural gas. Married. **953.**

Salesman—with access to gas company officials and plumbing and mill and mine jobbers on Atlantic Seaboard and West to Pittsburgh, Columbus and Cleveland. Wants engineering, mechanical or appliance line. 12 years' experience in this territory as salesman, sales promotion man and sales manager with two prominent manufacturers. **954.**

Working Foreman, for water gas plant, send-out about 100,000. 13 years' experience making gas, able to make general repairs and welding; familiar with high and low-pressure. Was foreman of plant 5 years with 150,000 send-out. South preferred. **955.**

Sales Engineer with established contacts and a New England office seeks exclusive representation with some manufacturer of financial standing who wishes to establish his line in the East. Background includes both gas and electric utility sales as well as managerial experience plus an excellent record with manufacturers. **956.**

Would like to hear from a company that is seeking a man of experience and personality to develop **house heating** industrial and commercial sales. If you have a virgin territory, one that requires personal contact to build good will and increase sales, communicate for further particulars. **957.**

Gas Appliance Sales Engineer now employed with one of largest manufacturers; 6 years' research and development and sales engineering cooking appliances. Thoroughly familiar all combustion and testing problems. Interested sales engineering with manufacturer or utilization department with utility; (35) Married. College graduate. **958.**

Sales Representative—experience selling utilities and dealers for reputable gas range manufacturers for past 10 years, majority time metropolitan area; have also traveled Eastern states, desires to make connection as sales manager or representative for reputable manufacturer. Has good personality and is well educated. American (37). **961.**

Manufacturers Representative, with exceptional experience and connections among architects, builders, plumbing supply jobbers, plumbers and gas companies, desires a medium or low priced line of gas ranges for the metropolitan New York City area. Calling on this trade for sixteen years selling gas equipment and specialities. **962.**

Experienced **Engineer-Manager** has held practically every position, with emphasis on engineering and operation phases, covering design, construction and operation every type water gas plant, operation verticals, coke ovens, by-product recovery, including natural gas distribution. Useful at headquarters or on property; specialist Washington plan rate basing and making. **963.**

SERVICES OFFERED

Sales—New Business—commercial manager: Thorough training, outstanding successful record initiating, directing advertising, publicity, merchandising campaigns; supervising industrial gas and power sales; developing costs, rates, selling prices; handling public relations, public ownership agitation, rate reduction demands, and appearing before commissions, boards, etc., on various matters; expert negotiator. **965.**

Salesman with 18 years' gas company experience, 8 years' selling all types of gas appliances, domestic, hotel and house heating, desires position, will go anywhere, own car. (39) Married. **966.**

Sales **Supervisor** or **Sales Engineer.** Have had considerable experience in industrial, commercial, house heating and domestic sales work. Also am familiar with design and installation of equipment. Have worked with manufactured and natural gases. University graduate and married. **967.**

Public Relations; advertising, publicity, complaints, public contacts, editing of employees' magazine, photography, six years. Industrial development and research; all details including surveys of various cities, towns and counties. Compilation and editing of data, marketing surveys, economic studies, four years. Merchandising; systematizing and coordination. **968.**

Manager-Executive—18 years' practical operating experience in all phases manufactured gas industry. Technical; university training. Particular emphasis and success in merchandise sales, load building, public relations; desires connection with straight gas utility in general or sales management capacity. Go anywhere; (40) married. **969.**

Engineer—Nine years in gas industry. Now employed as manager of small property. Desires position as Assistant Engineer of large property or **industrial gas** sales work with appliance manufacturer. **970.**

Ambitious advertiser, 31, seeks position where initiative coupled with varied experience in industrial and public utility fields may command recognition. Knowledge **accounting,** statistics, business administration, security sales work and record keeping, form drafting, freehand drawing, addressograph, mailing and inventory. **971.**

Mechanical Engineer; thorough research and production experience in all phases of manufactured gas distribution. Knows modern meter work (tin and iron) from treating leather to improving fast meter records; elimination of gum, etc. troubles; customer contact; languages, desires responsible position in distribution or with manufacturer; U. S. or foreign (31), married. **972.**

Graduate **Chemical Engineer** desires position with operating or holding company, where six years' experience manufacturing coal and water gas two years' experience operating meter repair shop and complaint department, and one year with house heating sales and engineering experience, can be of material assistance in lowering costs, or providing better service. **973.**

New Business Manager; extensive training, sales promotion, publicity, public relations, supervising salesmen, commercial and domestic, outstanding record as gas engineer, both natural and manufactured experience. Can give best of references. **974.**

Engineer, thoroughly experienced in appliance problems with manufactured and natural gas, desires position with manufacturer or gas company. Record includes ten years' research work in laboratories of national scope, five years' development of domestic appliances and controls; also sales. **975.**

Executive, with many years' experience in the gas industry; graduate in Mechanical Engineering with practical experience in gas plant design, plant construction and maintenance. Thorough knowledge of operating, new business relations, industrial fuel and house heating applications and sales. Take charge of management of company or new business department. **976.**

SERVICES OFFERED

Distribution Superintendent—**Gas Engineer.** B.S. and M.S. degrees, major in Gas Engineering. Four years' "dirt" experience high- and low-pressure distribution operation; two years' distribution superintendent of industrial territory (23,000 meters) including meter repair, appliance department. Completed Alexander Hamilton modern business course. Capable industrial or distribution engineer. (30). **977.**

Gas Engineer (37). Early technical training chemical engineering, nine years' chemical research gas analyses, fuels and gasoline adsorption. Eight years' active in gas engineering in charge of plant construction, inventory and appraisal valuations specializing in depreciation studies and public service commission contacts. Very best references. Married, energetic. **978.**

Engineer with utility accounting experience. B.S., M.E.E.; postgraduate work. Three years' research assistant, National Industrial Conference Board. Twelve years' gas and electric utility experience, rates, franchises, cost allocations, contracts, research in utility management problems. Experience with P.S.C. accounting. (N. Y.) Licensed engineer, New York. **979.**

Controls and **gas burner engineer** wants position offering greater possibilities. Has several years' practical work in design, application and operation thermostatic and gas mixing controls or mechanical and electrical types, and gas burners all types. Fundamental training and experience, combustion, metallurgy, mechanics and electricity; experienced production supervision. **980.**

Sales Engineer having specialized in the sales and promotion of automatic gas water heaters for over 10 years. Planned and conducted many successful sales campaigns. Well acquainted with gas companies, plumbing supply houses and have arranged many eastern plumber dealer setups. **981.**

Specialist in problems pertaining to efficiency, operation and maintenance; well grounded in the fundamentals of fuel production, transmission and distribution. Have proven record for load building, new business and fuel application. Experience also covers appraisal, rates, selling and public relations; graduate engineer. **982.**

Accounting, Cost and **General.** Eight years' experience; gas plant, transmission and distribution system construction and operations analyzed. Ascertainment of cost, accounting of same determined in conformity with utility and public service commissions requirements. Field records gas works and main systems audited and accounting and statistical reports compiled. **983.**

POSITIONS OPEN

An old, established concern having a complete line of gas fired boilers and furnaces desires high class **representation** in eastern, southern, and central territory. Will be interested if your lines are non-competitive. **0286.**

Sales Representative or **Distributor.** A large middle west manufacturer of a complete line of gas-fired automatic water heaters desires representation in the Los Angeles and Southern California territory. Prefer those now representing other lines of gas appliances, who can properly service 4,000 units now in that territory. **0287.**

Sales representatives in a great number of the states; the merchandise which we manufacture includes conversion type burners for natural, manufactured and mixed gas, safety pilots, electric and manual controls and miscellaneous accessories. **0292.**

One of the oldest and largest manufacturers of a complete line of gas burners is in the market for a **General Sales Engineer.** He must be a Mechanical Engineer Graduate, between the ages of 26 to 34 years. He must know the chemistry of gas as applied to combustion. **0293.**

Leading water heater manufacturer requires **salesmen** to call on Utilities. Must have previous experience. Good Territories open. Drawing account against commission. Replies held confidential. **0294.**

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* Died February 27.

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PRINTED IN THE U. S. A.